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# MEDICAL REPOSITORY,

FOR

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ANATOMICAL and PATHOLOGICAL OBSERVATIONS on the  
TEETHING of INFANTS; and on the analogy between IN-  
FANTILE DENTITION, and some other DISEASES: In a  
Communication from HORACE H. HAYDEN, of Baltimore,  
Surgeon-Dentist, to DR. MITCHILL, dated Aug. 25, 1809.

SIR,

MY ideas on the subject of Infantile Dentition differ, I believe, from any others that have been given on this head.—Their correctness, however, some have already acknowledged; others there are, no doubt, who will treat them as visionary. I have written the memoir not for fame, but to ascertain the truth of a subject on which the fate of millions of helpless infants depends. How can it be otherwise, sir, when we consider that, in many instances, their little gums, above and below, are charged with an acrid, or purulent matter, which is spreading inflammation through the mouth, until they are unable to take the breast; and if they could, the act of deglutition is impeded from the inflammation having extended to the pharyngeal muscles, particularly the superior constrictor, whose origin, or implantation is immediately opposite or near some of the infant molares. Hence we may conjecture that the cardiac or sympathetic plexus participates in the calamity; and why are we to wonder that ungovernable diarrhœas, constipations and cholics, loss of sensibility in the extremities, convulsions, and death should be the consequences? Look at the number of innocent victims, whose spirits have winged their flight from this world, (and that under *two years* of age, and *most* of which are over ten months old,) and ask why this period is so fatal to them?—The so much dreaded cholera infantum, so eminent in this tragic business, has some able accomplice; and I know of none more competent in itself, or capable of assisting than

*Infantile Dentition.* I have suggested some ideas on the probability of an acrid secretion being an agent in various diseases of the bones.

HORACE H. HAYDEN.

HON. SAMUEL L. MITCHILL.

THE subject of Infantile Dentition is of such importance, that, when we consider that in it the lives of so many thousand helpless infants are immediately involved, it affords matter of no small degree of surprize, that it should have remained so long a matter of uncertainty, as to the *real* cause of the effects resulting from it.

Under the generally received opinion, it appears simple; and without doubt it is from this opinion, that many have been led to view the subject as unworthy of further investigation.

But when we see in the different bills of mortality, the number of deaths occasioned by teething; when we see by the report of the health-officers of London, and Paris, that of the number of deaths, nearly three per cent. are carried off by teething, it must be admitted by every humane mind that it is a subject as much deserving enquiry, as *any* other disease which dooms the same number of our fellow-creatures to the grave.

Having paid much attention to the subject, and examined it particularly, I am induced to entertain an opinion very different from the prevailing ones on this subject.

But, in endeavouring to inculcate and establish an opinion, however plausible it may appear, in opposition to one long established, and supported by the most respectable authority, I am *well* aware of the disadvantages under which I labour, and of the difficulties to be surmounted wherever prejudices prevail; for they are equally as likely to operate in favour of established opinions, as of customs.

But I flatter myself that with the candid enquirer, *truth* will appear no less valuable, whether found on the surface, or at the bottom of a well; and, that the flower will be as duly estimated if found on a rock, as in a cultivated range of *more luxuriant* soil.

In submitting to your consideration my opinions on the subject of teething, an attempt to detail in regular order the nature and variety of the attendant symptoms, would be useless and unnecessary.

I shall therefore proceed to examine the prevailing opin-

ions of different authors of respectability and known reputation, in order to give a full and comprehensive view of the subject.

Hunter, in speaking of the cause of the symptoms of Dentition, says, "that the teeth in their growth act on the surrounding parts, as extraneous bodies; and as they advance in size, they are in the same proportion pressing against these sockets or gums, from whence inflammation, ulceration, &c. are produced."

Underwood, who has paid great attention to the subject, seems to entertain a similar belief, as does likewise Bell, and others who have written on this subject.

Fauchard, (tome 1st.) says, "that the causes of the evils arising from dentition, are occasioned by the teeth rising in their alveoli, and meeting with the periosteum which surrounds, invests the jaw, and occasions a degree of tension capable of producing the different symptoms experienced;" and urges the necessity of an early attention to the symptoms, that they may be removed, and the disagreeable consequences avoided.

Bourdet, (tome 1st.) says, "that when the germ of the tooth enlarges and meets with the periosteum that invests the jaw, that the membrane, as well as the gums, are subject to a greater or less degree of tension, and inflammation, from the constant *distention* of the alveoli, by the presence of the tooth; at length by its presence it irritates the nervous fibres distributed in those parts, and the symptoms are increased," to a degree that often terminates in death.

Laforge, (a late French author) does not, however, treat the subject of Dentition as possessing that influence over the fate of Infants, that there is too much room to believe it has.

He even says, "that ninety-five hundredths of the infant teeth come to maturity without causing any of the supposed symptoms attendant on teething; and that when the symptoms do prevail, they are the effect of general disease, or the constant irritation produced by the teeth in one jaw, striking against the opposite jaw where there are no teeth.

Garriot, (in his valuable treatise on the diseases of the mouth) says, "that the variety of symptoms attending dentition, are produced by the difficulty (to use his terms) which the organization experiences in the gradual development of the germ of the teeth; and to the great nervous irritation produced about the parts"—and that in infants of



a firm and good constitution, the teeth are protruded with facility and ease, and without producing the least derangement in the organic functions of the infant; the which is the reverse with an infant mal-constituted, or weak, diseased, and of great nervous susceptibility.

In reply to Hunter's opinion, and others, who maintain that the teeth, in their growth, act as extraneous bodies in pressing against the plates of the alveoli, from whence inflammation, ulceration, &c. proceed, I could almost as soon suspect that the os medium and minimum of the tarsus, or the trapezoideus, and magnum of the carpus, bound together by numerous tendons, ligaments, &c. should in their lateral expansion, produce those symptoms. For there exists such a perfect co-aptation, and disposition in the parts at that age to yield, and accommodate (particularly in the external plates of the alveoli, which are in many instances almost as thin as a piece of paper) that were we to admit the probability of their acting with such force against the sockets, from whence the above symptoms proceed, let me ask, at what period ought we to date the commencement of the symptoms, and pains of dentition? At the commencement almost of ossification, or at least from the moment the infant is born, their duration always accompanying the growth of the teeth, until they appear through the gums.

Besides, there exists such a perfect uniformity in the different classes of all human teeth, that if it is admitted in one case, why is not every child that is born subject to the same inconvenience, since the operation is the same, and subject to the same laws throughout the whole race of mankind.

This disposition in the bones to yield and accommodate, we find manifested in all the variety of cases, without producing any inconvenience, even in bones of considerable thickness and volume.

According to Mr. Sheldrake's improved mode of remedying distortions of the feet, (*Vari & Valgi*) the deformity has often been removed, with children of seven months old, by the judicious application of a constant, but gentle pressure.

And, although the same degree of susceptibility does not prevail at the age of puberty, as in infancy, yet at that age a tooth out of range, may be brought into place in a few weeks or days, (which will occasion a considerable enlargement of the alveolar process) and that almost without exciting local irritation. Besides, if it be admitted that the alveolus is lined with its own periosteum, (as it is by some said



to be, and of which, from my own experiments I am fully satisfied) and that the teeth are capable of producing those symptoms by pressure and distention, is it not reasonable to expect that the same result would ensue, as in almost all other cases where the periosteum suffers by pressure or otherwise, an injury? As "the *beating of aneurisms*, the growth of tumours, the *pressure* even of any external body, will, by hurting the periosteum, cause exfoliation." See Bell on the growth and formation of bones.

As to the prevailing opinion of those who maintain that the violent symptoms of teething proceed from the increased tension of the gums, by the presence of the tooth, or teeth underneath, I am equally inclined to think it without foundation, for the following reasons.—

1st. If the teeth are the cause of the tension and consequent inflammation, why are not all children subjected to the same inconvenience? If it is a healthy child, and the gums in a healthy state, are not they capable of supporting a greater degree of tension than otherwise, consequently an increase of symptoms? On the contrary, if the child is mal-constituted, or disposed to scorbutic affections, the gums relaxed, &c. are not the gums more susceptible of irritability, consequently equally afflicted?

It may be said, in support of this opinion, that all children are not alike constituted; that some are subject to extreme nervous irritability, and that with such, the sympathetic powers are more easily brought into action, or operation; therefore the symptoms are rendered more alarming, and the diseases resulting therefrom more obstinate. Admitted.

But we see children of the above description possessing their complement of teeth, without having manifested any thing more than the ordinary symptoms of teething.—Whereas, children apparently of the most firm and healthy constitutions, (contrary to the opinion of Mr. Garriot) are reduced to an alarming state, and that solely from teething as appeared; for, by lancing the gums freely the child was in a short time restored in health to the arms of its distracted mother.

2d. If the gums are susceptible of this degree of tension from the tooth, why are not the symptoms removed, soon after a union of the parts takes place, which is almost as soon as a puncture in the arm for blood-letting, or at least in a few hours?

3d. Whenever the tension of the gums is so far increa-

sed as to produce ptyalism, fever, convulsions, &c. there is generally a greater or less degree of morbid excitement in the parts, so as to produce ulceration and other unfavourable appearances in the mouth, sufficient to destroy that disposition generally manifested in the gums to unite again so soon after being lanced, admitting the tooth to be the cause; for it still remains as much or more so than before.

4th. If a moderate tension of the gums can be supposed to induce the ordinary symptoms of teething, may we not readily suppose that they would be increased in violence in proportion as the teeth enlarge, unless the gums are lanced, or the tooth appears through them? Yet we see children indicating manifest symptoms of teething, and much indisposed, and in a few hours after every symptom subsides, and no indisposition is perceivable, and that without the agency of any kind of prescription. These alternate changes, a very large proportion of children are subject to, through the whole course of dentition.

In these, as well as almost all other cases, the symptoms are induced by diseased action, and removed by the resources of nature, unless previously by artificial means.

5th. It is urged by some, that one of nature's resources in aiding dentition, is manifested in children by a disposition to bite and chew the different kinds of things which are put into their hands for their diversion; and that the same disposition is apparent in different animals, (agreeable to Underwood) particularly the domestic kind, for, "As soon as the teeth begin to shoot they are always strongly inclined to gnaw such things as afford a little resistance."

I have before said, that painful dentition is owing to a diseased action. Whenever this prevails about the head, the same disposition is manifested in children by their propensity to rub and scratch the part affected, as in sore ears, scrophula, &c. and the more they are indulged in it, the more the irritation is increased; the which I am inclined to believe is the effect of the coral, &c. applied to the diseased gums.

In young animals, this disposition to gnaw and bite such things as afford a little resistance, is no proof of teething, or that it facilitates the operation, but rather a disposition to playfulness, particularly in the domestic kind; for it is common to see them playing, and apparently biting each other for hours, which exercise no one will suppose has any direct effect in removing a tension of the gums.

Besides, they are equally disposed to divert themselves with a suspended thread, tape, or a piece of rag, as any thing else, which is but ill calculated to relieve a tension of the gums, provided it does prevail.

Lastly, if by the presence of the tooth pressing up under the gums, and (seemingly ready, from appearances, to burst through) the tension is so far increased, together with the other symptoms, as to render it necessary to lance the gums, may we not reasonably expect that the edges of the incision would immediately withdraw, not to unite again? Yet Hunter says, "I have performed the operation (of lancing the gums) *above* ten times, upon the same teeth where the disease had recurred so often." Mr. B. Bell says he has performed the operation several times before the tooth appeared. Other authors tell us the same.

With respect to the investing membrane of the jaw, being the cause of the evils arising from dentition, or having any agency in the business, I think the same reasons advanced on the tension of the gums are applicable in this case, particularly as to the cutting, and re-uniting after repeated operations; for if we consider the nature of the periosteum, it will readily be admitted that it is much less likely to unite than the gums are, after being cut ten times at different periods during a tension.

M. Laforgue's opinion on this subject seems so destitute of support, and differs so widely from what daily experience warrants us to believe, that it scarce needs a reply. Yet it cannot be amiss to observe that the two incisores in either jaw are capable of producing some trifling inconvenience, and irritation in the gums of the opposite jaw where there are no teeth. But this inconvenience is soon relieved by the two opposite teeth appearing, which prevents the teeth of one jaw from striking against the gums of the opposite jaw; for whether the upper teeth fall over the under, or vice versa, it will require some exertion to bring the teeth in contact with the gums, so as to produce irritation. Beside, these are not the teeth that produce the most alarming symptoms, as daily experience proves.

In reply to the above author's opinion, that the diseases of the mouth, or gums, during dentition, are the effect of general disease, it seems to be reversing the order of things, and substituting effect for cause: and that in order to remove a cause, we must first remove the effect; for we find that by lancing the gums freely, children are often re-



lieved from convulsions and many other unpleasant symptoms remote from the gums, and which are evidently produced by teething, as appeared from cutting or lancing them.

Mr. Garriot seems likewise in this instance, to have committed the same fault in mistaking the effect for the cause; for while he acknowledges the derangement of the organic functions during dentition, he admits that there is much diseased action about the gums and mouth; the former being swelled, puffed up, highly inflamed, and very red, at which time the infant manifests much pain in the gums, &c. yet he condemns the practice of lancing the gums, as having no good effect, except that arising from local bleeding; and while he disapproves the above practice, the very means which he prescribes as preventatives, or for relief, (*viz.* leeches, blisters, &c.) act as a substitute for lancing the gums; and the parts to which they are applied, (*viz.* at the angle of the jaws) is an ample proof that the efficient cause of the evils which he is endeavouring to alleviate, lies within the gums, and is induced by the teeth.

Having noticed the different prevailing opinions on the subject of Infantile Dentition, which I consider unsupported by reason or analogy, I shall in the next place proceed to explain to you my own ideas on the subject: and, inasmuch as the effect is produced, the question arises, what is the cause, and when is an infant liable to it.

In answer to the latter, I shall observe, that in the ossification and developement, or enlargement of the teeth, I cannot conceive that they can have any agency in producing the symptoms of teething, until their points or edges are protruded above the edge of the alveolar process or jaw, at which time there *begins* to form a *cavity* upon each tooth, which enlarges in its capacity in proportion as the tooth rises above the jaw.

In order to prove the existence of those cavities, it is necessary to examine the physiology of the teeth; in doing which it will be found, that the enamel which surrounds the body or crown of the tooth is intensely hard, of a vitreous nature, and not vascular in the least possible degree that can be ascertained by any experiments hitherto made; consequently of such a nature, that neither the gums or investing membrane can possibly adhere to it. Therefore, as the tooth rises in its alveolus above the jaw, the gums only lie over the tooth as a covering; underneath which, although they lie on the teeth, they are entirely free from the tooth,

and whether the space is small or large, as such they constitute what I shall term cavities.

In the next place, I believe it is generally admitted that in all cavities in the human body, there is a constant secretion of fluid, differing perhaps in nature and consistence as the purpose for which it was intended may require.

Consequently, from the peculiar vascularity of the gums it will be admitted, that there is a constant infiltration, or secretion of fluid into those cavities surrounding the teeth, and which fluid has in this instance but one mode of escape, and that is by the absorbents.

In constitutions of different temperaments, and subject to changes, it happens that some derangement in the animal economy takes place by which the absorption of this fluid is prevented. By its retention between the gums and teeth, or in those cavities, it becomes not only incrassated, but increased in quantity, and in its *acrid* quality, until it is capable of producing "irritation, inflammation, and ulceration," together with most other symptoms and calamities attending difficult and painful dentition.

(To be continued.)

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OBSERVATIONS on the INFLUENZA of 1807, as it appeared in Maryland. By Dr. G. WILLIAMSON, of Baltimore: In a MEMOIR read before the MEDICAL LYCEUM of that city.

(Continued from page 149, and concluded.)

### SYMPTOMS.

THE general Symptoms have been given, and to define them in a regular order, were I believe impossible. It commenced perhaps more frequently with sneezing than any other symptom; but it did not always thus commence, for sometimes a cough, and at others a pain in the head, breast, or some other part of the system preceded, and at others the eyes were first affected. Some were attacked suddenly, others were predisposed to the disease several days previous to a formal attack. When a lassitude accompanied with a soreness of the muscles and a depression of spirits took place, the disease might be expected; and if in addition to these symptoms, there was a heaviness about the eyes with a sense of intumescency in the palpebræ, coryza

and occasional sneezing, the person was almost as sure of having the disease as if he were then labouring under it.

### TREATMENT.

Here I must be less methodical, if possible, than in the preceding part of my essay. In order to do justice to my subject, I think it necessary to give a few cases; and shall commence with the first one that occurred in my practice. It occurred about the 12th of August: I at first supposed it a case of pneumonia, and treated it as such, beginning with the lancet: then cooling cathartics, sudorifics, diluents, and a strict adherence to the anti-phlogistic regimen. When I first saw this patient, the symptoms were severe pain in the breast, troublesome cough, pulse full and strong; however, in the course of twenty-four hours the more genuine symptoms of influenza took place, such as sneezing, defluxion from the nose and eyes, pain in the head, &c. &c. The subject of this case was a black man, aged about 30 years, of rather a robust constitution, and the inflammatory symptoms were greater than in any other case which I saw until about the cessation of the epidemic. I believe he was bled twice, took two or more doses of the sulphate of soda, continued for several days on the use of nitrate of potassa and tart. antim. which was my favourite sudorific. The subject of the next case was a person of a more delicate habit, and evidently predisposed to phthisis pulmonalis. He had also a severe pain in the breast, epistaxis, and I believe a hemoptysis, with cough and fever: a vein was opened, but before eight ounces of blood had flown he became deadly sick, and I was obliged to tie up his arm. Afterwards a small dose of salts was given, succeeded by the antimonial powders, with the free use of diluents, &c. This patient was considerably relieved in less than forty-eight hours, but an intermittent fever almost immediately succeeded, which induced me to prescribe the cinchona, and this completed the cure. As this case soon terminated in an intermittent fever, and as those who were now attacked with the influenza, complained of great general prostration of strength, and as there was evidently less inflammatory action than at first, I began to distrust the propriety of a general use of the lancet, and from a few more trials was induced to discontinue it as pernicious, except in those cases where there were more than ordinary symptoms of pneumonia; and in patients evident-



ly predisposed to phthisis pulmonalis, or where the pain in the head was excruciating, with inflammation of the eyes, and a pulse indicative of considerable inflammatory action. Under these circumstances, especially the former, to many it would appear criminal not to have recourse to the lancet as the grand instrument of our patient's salvation; and yet under these circumstances, I am convinced that a too liberal use of it has been attended with and succeeded by irremediable evil. This is not a mere assertion, for were it necessary I could produce cases to prove the fact; cases which came within my knowledge, if not under my immediate care. I doubt not but that on the contrary, many suffered for want of judicious bleeding. It is unfortunately with medicine as with politics, and every other thing which can give birth to a diversity of sentiment; we are too much attached to our own opinion, or to that of some distinguished character whom we humbly, but *most assiduously* imitate, and by this mean we sometimes render ourselves insusceptible of improvement, and even deaf to the dictates of common sense. Our worthy countryman, Rush, has very justly said "that we should read, think and observe—observe, read and think for ourselves:" and although veneration and respect are due to many of our predecessors in medicine, and to not a few of our cotemporaries, yet wisdom should teach us not to put implicit confidence in any theory, nor in the opinion of any man, for every man leaves this inscription, "Thou art fallible!" When we become almost solely influenced by the opinion of others, or blinded by an obstinate attachment to our own, we become biassed in our judgment. Those who are thus influenced may act correctly, but if they should be wrong, the wrong they will pursue, for he who is biassed in his judgment is not open to conviction. "Unbiassed judgment will perceive that wisdom dwells with moderation," is a maxim that will hold good in the practice of medicine, as well as in religion, morals, politics, &c. &c. The important cause of this digression shall be its apology.

After becoming suspicious of the propriety of a general use of the lancet, in a majority of cases I commenced the treatment with a dose of sulphat of soda; after its operation, I confined my patient to his bed, and then put him on the use of the sudorific powders, giving one every two or three hours, until a free perspiration was excited—then less frequently to support it; for but little advantage was obtained by sweating unless it was continued for some time. In using

sudorifics, there is more care requisite to prevent a relapse than in the use of almost any other remedy ; for if by exposure or any other means the perspiration is stopped and the pores obstructed, the disease re-attacks, and not unfrequently with increased violence, owing I presume to reverse sympathy. Hence the necessity of guarding against sudden transitions of temperature, by keeping the body warm, by changing the clothing, &c. as the weather changes ; and by guarding against every exposure which has a tendency to produce either directly or indirectly a torpidity of the cutaneous capillaries : hence also the necessity of supporting for some time a diaphoresis. In using the antimonial powders, considerable care was requisite, for when given in too large a quantity or too frequently, they proved emetic ; and I do not believe any advantage was derived from emetics in this disease, but that in many cases they were exceedingly pernicious. Some of my patients were puked by these powders without any apparent benefit. In fact, in some few cases I was under the necessity of discontinuing them from their proving emetic, and by that means exciting the stomach to such a state of irritability as to make it reject, or at least eject such other medicines as were necessary. This affection was so considerable sometimes, that even drink and the lightest diet excited puking.

#### DILUENTS.

I confided much in diluents, and preferred linseed or bran tea sweetened, and acidulated with lemon-juice or a little vinegar.

#### REGIMEN.

As this was a sthenic disease the antiphlogistic regimen was that which I prescribed. However, in a great many cases, it was not of much moment what kind of diet you prescribed, as there was little or no appetite : stimulating and heating drinks were prohibited.

#### EPISPASTICS.

When there was much pain in the chest, which did not succumb to the lancet, &c. vesicatories were necessary. They were also requisite in some violent attacks when the head and eyes were the principal seat of disease.

### EXPECTORANTS.

The linseed and bran tea are valuable simple expectorants, and tart. antim. is perhaps in this respect one of the most valuable articles in the materia medica. This article I prescribed in almost every case, and always with a belief that it would not only excite a determination to the pores, but also that it would promote expectoration. The tinct. opii. camph. and syrup. scill. were used after the inflammatory symptoms had subsided, to allay the cough subsequent to this disease. They are also good expectorants.

### CONVALESCENCE.

In many cases my patients were in a convalescent state in less than twenty-four hours, in others forty-eight, and some required even a longer time. In but few cases could the patients be said to be entirely well in less than a week or two, and in some not so soon. The cough generally remained longer than any other symptom of disease: in ordinary cases it was palliated by the free use of linseed or bran tea, with the occasional use of tinct. opii. camph. and syrup. scill. or vin. antim.; however as in the disease, so in the symptoms, contingent circumstances were to be consulted. If in addition to the cough, there was pain in the breast, increased arterial action, &c. it then became necessary to unsheath the lancet and treat it as a recent case of pneumonia: this was the more highly necessary if the patient was predisposed to phthisis pulmonalis. But if the patient was much reduced, complained of great general debility, had only an exterior pain in the chest, occasioned by coughing, pulse feeble, loss of appetite, frequent slight chills, muscles relaxed, nervous system much disordered, &c. it then became necessary to have recourse to tonics. These symptoms prevailed in many cases, especially with the aged, and more especially with the aged and infirm. In the majority of these cases the squills et Elix. Paregoric, with chamomile tea, taken cold, cured my patients; but in some few cases these were not powerful enough, and to save my patients, I was obliged to have recourse to the bark. My worthy friend, Dr. D—! informed me that he used it in several cases where the cough, &c. were exceedingly troublesome, with the most salutary effect, after the failure of the most of those remedies



used in similar cases. This treatment is not new, although it is but seldom adopted; yet it has been sanctioned by men whose fame must remain conspicuous so long as there shall be an occasion for the healing art, or as this profession shall be held in remembrance. When general debility, with those other symptoms which have been mentioned, prevails, and we are induced to believe tonics the only medicines which we can look to with a well-grounded hope; it is our duty then to have recourse to those which increase the strength of the system without increasing its force or action; or if the force is increased, let it be gradual, and not such as it would be from the use of aromatics or active stimulants. Amongst the medicines which have this effect, the celebrated Hunter has justly included Peruvian bark. The impropriety of using such medicines as would much increase the arterial action in diseases of the chest, where consumption may be apprehended, is obvious. To use them where there are evident symptoms of inflammatory action in the system, would argue great ignorance of disease and the healing art: but not to use them where the system is overwhelmed with debility, and the patient expiring for the want of support, would be as irrational as it would be to suppose a lamp could continue to burn after its oil is consumed. I believe there is occasionally a cough and other attendant symptoms which would induce a superficial observer to suppose that the patient was labouring under a consumption, or at least that he was predisposed to one; when in fact the disease is of a very different nature, and if treated in the manner too generally supposed most judicious, especially that so highly eulogized by some of our moderns, the consequence must be fatal.

When reason, experience, and authors of celebrity, sanction our doctrines, we have nothing to fear from the supercilious critic. In a letter from Sir George Baker, Bart. to Doctor John Fothergill, respecting the influenza which prevailed in Europe, in 1775, he expresses himself thus: "the fever being sensibly remitted, according to my experience, the Peruvian bark was used with advantage; and likewise, when a languor and debility (as frequently happened) continued, after the vehemence of the disease was subsided, this proved a useful remedy." That the cough continued for some time after the fever had "sensibly remitted," is very obvious, from an observation of Fothergill; "in a few days," says he, "every complaint abated,

except the cough, which continued after the subsiding of the other symptoms."

Whether there be such a power as the *vis medicatrix naturæ* or not, I shall not presume to determine ; but am confident that material advantage was derived from attending to certain indications in the system relative to this disease. If it appeared predisposed to terminate in any particular manner, I always found it adviseable to attend to the monition. My own case confirmed the truth of this opinion ; I was attacked about the first of September ; the first symptoms were sneezing, tickling cough, a sensation of soreness in the fauces, trachea, and chest, with a peculiar anxiety to expectorate. It commenced about 5 o'clock P. M. That evening I rode upwards of nine miles in the country, and returned after night. On going to bed, I took some syrup of squills and nitre, and drank a cup of warm bran tea ; my perspiration was as copious as I wished, and by morning a pretty free expectoration was excited, which was what I most desired ; it was supported by expectorants. I was not bled ; nor did I take any active medicine, not even the most gentle purge ; but, from the second day, took bark, and drank porter ; not as a remedy in this disease, but to prevent the intermittent fever ; a disease to which I am very subject, and was, at that time, apprehensive of, from peculiar sensations, which, with me, are always harbingers of it. I was not confined one hour with the influenza ; nor prevented from paying that attention to my practice which it claimed ; although at this period it was very laborious and fatiguing, having to ride twenty or thirty miles a day in the country, and having forty or fifty patients to visit, and prescribe for, per day, in the city. I wish not to be guilty of egotism, nor, to sound my own praise, but as medical writers, in general, tell of the success of their practice, I must claim the same privilege ; and out of several hundred patients whom I attended in this disease, but one died. This patient was more than three-score years old, and had, for a long time, been afflicted with the asthma. She lived alone, and did not, from the first, comply with my directions ; nor was it in her power, for she had no attendants to administer her medicine, except when some of her neighbours stepped in, and they were destitute of the feelings of humanity ; for, on the morning of her decease, when I called to see her, I found the good ladies, her neighbours, dividing her property with great interest, and apparent pleasure.

The day preceding her decease, she was much better ; I found her sitting up, and quite cheerful. No person could tell when she grew worse, nor what the symptoms were which immediately preceded her death.

Towards the decline of the epidemic, it became more highly inflammatory than it had been, and more unmanageable ; the lancet was now, in a few cases, used with advantage ; the other remedies were such as had been used in former cases. How are we to account for this disease being more inflammatory in the commencement and towards the decline of its prevalence, than in the interim ? Could it be owing to any peculiarity of the disease, or to any modification of its cause ? Might we not with more propriety suppose it owing to something relative to the system of the patient ? Warm weather is very debilitating, and has a most powerful effect on the human system. It has been observed that the spring, &c. of 1807, were remarkable for being cool ; but that there were several weeks of very warm weather, during the prevalence of the influenza. When the epidemic commenced, the tone of the solids must have been much more considerable, than after the weather had become much warmer. If the warm weather had the effect of relaxing the solids, every day would increase that effect ; but towards the termination of the disease the weather was less warm ; the relaxing cause being then, in part, removed, the solids began to regain their usual tone ; and this disposition was increased by the refreshing atmosphere of approaching winter. That heat has a powerful effect in relaxing the solids, is a truth, so universally known, that to adduce any arguments to prove it, would be a work of supererogation ; and that sthenic diseases are not so highly inflammatory in a system thus relaxed, as in one which is not, is a truth equally obvious.

I intended to have dedicated a paragraph to some of the most interesting diversities of this disease ; but having been already induced to notice some of them, and intending to notice others in a recapitulation, I will, for the present, wave their consideration.

I will now proceed to a recapitulation ; and shall also expatiate a little ; *more especially*, on my mode of treatment.

The influenza, of last year, commenced, I believe, in New-York ; it appeared there about two or three weeks before it did here. As New-York was the place of commencement, it gradually progressed from thence in every other direction ; but no doubt more rapidly in some than others.



It was a sthenic disease ; and more highly so in the commencement, and towards the decline, than in the interim. From the different histories given of it, I believe it to have been more highly inflammatory in New-York than here ; also, more so in the places where it prevailed last, than in those antecedent. Where the disease was the most highly inflammatory, there was the greatest necessity for the use of the lancet, and other active depleting remedies ; as was here at the commencement, and about the decline of the epidemic. When the sthenic diathesis was considerable, attended with pain in the breast, cough, &c. the lancet was used with advantage ; when this was not the case, I believe bleeding was a pernicious practice ; reducing the system more than necessary, and not unfrequently, causing disguised intermittents, or other formidable diseases.

#### EMETICS.

I think, these were generally pernicious ; and to have given them, in some cases, would have argued great ignorance, or a criminality ; for hemoptysis occasionally attended this disease ; and to give an emetic under such a circumstance, would be a bold experiment indeed. An eminent author observes, "Emetics should be cautiously administered in cases where we know that there has been, or have sufficient reason to apprehend there may be, a rupture of any considerable vessel in the lungs. Indeed common sense says they should not be used when there either has been, or there is reason to apprehend may be, a *rupture of any vessel* in the lungs ; for a small rupture, when improperly treated, may produce diseases of so formidable a nature, as to evade the power of medicine, and bid defiance to the healing art ! Let us for a moment, image to ourselves a person in the act of puking :—the body is very violently agitated, the diaphragm forced up, the thorax contracted, the lungs compressed, and convulsed ; and immediately afterwards, an increased ingress of blood to the lungs." Here let us pause ; reflect ; and see if our judgment pronounces it a judicious remedy in such affections. Puking, not unfrequently, causes considerable pain in the breast, which remains distressing and alarming long after the cause ceases ; and which, alas ! not unfrequently continues, and is the foundation of a disease, the most formidable of all others. But to continue, our

image, "The straining is attended with a great deal of pain, both in the stomach,\* and head; the face and eyes become red; all the veins appear turgid with blood;" and, in a few minutes, "a sweat breaks out upon the face and other parts of the body, and the pulse is quick and strong." Here other objections to puking arise; for it is well known that the head suffered much in the influenza. The cephalalgia was frequently excruciating; in some persons over the whole head, others, the sinciput, and in others, the pain was confined to a small part; sometimes the temples, and at others, directly through the frontal sinuses.† And when the pain was not very acute, but rather obtuse, there were evident symptoms of a preternatural determination to the brain. The eyes were inflamed, and there was a peculiar sensation of fullness, more easily conceived than expressed. To have administered an emetic, under such circumstances, would have been extremely hazardous; for no precaution could have prevented an increased flow of blood to the brain during the act of vomiting; and to solicit an increased flow of blood, to an organ, already morbidly distended, would be dangerous. The more important the organ, the greater the danger. The brain is too important an organ to experiment with. How frequently do apoplexies prove fatal! and they are generally in consequence of a congestion or effusion of blood in the brain; and any cause which increases an afflux of blood to this organ, may produce these effects.

\* I am well aware that in some diseases, puking is the most salutary remedy we can prescribe; but the diseases in which it is absolutely necessary to have recourse to it, are but few, when compared to the great number of morbid affections to which the human system is subject; and when we consider how very doubtful a remedy it is, I am astonished that it is continued in so general use. We know that a great many persons are subject to violent spasms whilst under the operation of a puke. A few days since, a very intelligent lady told me that two of her family died in consequence of taking pukes, and that one had nearly killed her. In addition to our experience, eminent authors might be quoted to prove the baneful effects of emetics; not only as relates to the spasms which they occasionally produce, but also as they sometimes occasion ruptures of blood-vessels which very soon prove fatal. However, as I am engaged in writing an essay on a subject where quotations of this nature will be more a propos, I shall defer a further notice of them till then; when I shall also prove, from the best authority, the utility of the bark in certain diseases of the lungs.

† This was a very frequent symptom, and in one case under my care, there was a suppuration in the sinuses; the pus was discharged, per nares, and from the mouth.

As I had not recourse to emetics in this disease, it may be supposed that these strictures might have been spared ; but I believe " to attack an error is the common right of every man ; and that in physic it is a duty. He who is consecrated to the preservation of his fellow-citizens, ought not to fear to raise his voice against prejudices of which he knows the danger : more especially when in their place he can substitute an useful truth."

### CATHARTICS.

The propriety of cathartics in this disease, is too obvious to be doubted ; and their manner of reducing the system, too well known to need a description.—" Besides the general evacuation of the whole system, purging is powerful in changing the distribution of the blood into the several parts of it :"—which is to be thus explained :—" If an evacuation is made from one set of vessels, the afflux of fluids will be increased in these, and the afflux into the other parts of the system, at the same time diminished ;—hence the great relief experienced by purges, in diseases of the head and thorax."

In the influenza, and all catarrhal affections, I prefer the neutral salts ; they may not reduce the system so much as some of the drastic purgatives ; but, I think them preferable on several accounts : they are less stimulating, and excite less pain, during their operation ; they have also a cooling property. If the doctrine of refrigerants, be correct, the neutral salts may, with propriety, be termed, refrigerating cathartics.\* When the stomach rejected salts, I generally gave calomel and jalap, combined in pills.

### SUDORIFICS.

We now come to a remedy which I appreciate very highly in the influenza. It is one, which not only medical philosophy, but even common sense dictates. How very natural it is, to suppose that when a disease is occasioned by an obstruction of certain outlets, that that obstruction must be

\* Since it has been ascertained that neutral salts impart cold only during their solution ; it is perhaps only negatively that they have this effect. When taken in an undissolved state, they may generate cold in the stomach, and then have a positive effect.



removed before the patient can be cured : for instance, if the cholic is occasioned by a constipation of the bowels, the disease may be palliated, but cannot be cured so long as the cause remains. The efficacy of this remedy is to be accounted for on the principle of reversed sympathy. Doctor Darwin, who appears to have been better acquainted with the doctrines of association and sympathy, than perhaps any other author, after making some pertinent remarks on the manner in which reverse sympathy causes a catarrh, observes, " other curious circumstances attend this disease, the membrane (the mucous membrane of the nose) becomes at times so thickened by its increased action in secreting the mucus, that the patient cannot breathe through his nostrils. In this situation, if he warms his whole skin suddenly by the fire or bed-clothes, or by drinking warm tea, the increased action of the membrane ceases by its reverse sympathy with the skin ; or by the retraction of sensorial power to other parts of the system ; and the patient can breathe again through his nose." Although it is always judicious to dress comfortably warm, and even necessary to guard against an exposure to cold in catarrhal affections ; yet I do not conceive it necessary to dress disagreeably warm, nor to keep the room, in which the patient stays, oppressively so ; nor was it even my wish to excite a sweat by means of hot or highly stimulating medicines. Tartrate of antimony, when given as a sudorific, is given in nauseating doses ; it then relaxes the solids, and by reverse sympathy operates on the cutaneous capillaries. Nitre is generally supposed to act as a refrigerant, consequently must be an antiphlogistic, and not a stimulant. The drinks I prescribed, were directed to be taken tepid, and not hot : they were considered as diluents, and not stimulants :—hundreds of cases might be given to prove the efficacy of sudorifics in this disease, but one shall suffice. A gentleman of great respectability, and much information, after being exposed to the night air, was suddenly attacked with the influenza ; he had observed the utility of sweating in this disease ; and so soon as he discovered his situation, went and wrapped himself in a blanket. He sweated profusely for several hours ; and it relieved him ; he did not take any medicine, nor was he confined, except while under the sweating process.

I think it much to be regretted that the use of the tepid bath was lost sight of in the treatment of this disease ; be-

lieving it a remedy that might have been singularly useful.

I do not deem it necessary to say any thing in confirmation of the utility of the expectorants used, as general experience justifies them:—nor of the vesicatories and diluents, as their virtues ought to be generally known.

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LANCISI'S *Work on the NOXIOUS EXHALATIONS of MARSHES:*  
*Published in Latin at Rome about one hundred years ago,*  
*and translated into English by SAMUEL L. MITCHILL,*  
*at Washington, during the second session of the ninth Congress,*  
*1806—7.—Announced in our 2d Hexade, vol. 4.*  
*p. 304. (Continued from p. 126.)*

#### CHAPTER SIXTH.

*The reasons why stagnant waters are more particularly prone to corruption during the summer, in the open air.*

I. **I**T will be evident to any one who reflects upon the composition of water, and of its particles, that there is no septic principle in them, by which they can corrupt and infect the air. It will be equally clear that the causes of putrefaction are derived from without. For if pure and fresh water be taken from the spring and immediately sealed up hermetically, so as to cut off all communication with the atmosphere, it will remain uncorrupted for years, perhaps indeed forever. This experiment was made many years ago, with the waters of the Lucrine lake. Therefore the origin of the infection must be sought for in some foreign substance, with which the water is tinctured.

II. Now, simple water is a liquid, void of compressibility, composed of round, smooth and flexible particles, and possessing small spaces between the sides which touch each other: through those spaces, an ethereal substance which causes fluidity, a portion of air, with some salt and earth, have free passage. Hence these mixtures of foreign bodies give a different quality to waters, corresponding with their original varieties.

III. But an external and material cause of the corruption in water, is the heterogenous mixture of different bodies, animal, vegetable, and mineral, which are produced, (as we

know of insects) and brought together in its sluggish pools. There are two other agents in the work, without which there could be no corruption whatever in water. These are *the heat of the sun*, by whose influence the putrefactive fermentation of the mixture is promoted; and *the stillness of the water*, by which the impediments to corruption are removed.

IV. Every person that has eyes may see that lakes and ponds are collections of vegetables and insects, which whether they originate there or elsewhere, constitute a stinking habitation for living beings. Of these there are some plants which swim or float upon the lazy surface, as the marsh-mosses, water tribulus and others; some adhere to the bottom, and occupy the shores, as the water-lilies, spargania and others, which form a margin of reeds and rushes. Among the eggs of insects, besides those that are laid in the earth, a considerable number wafted hither and thither by the winds, when they arrive at a marshy place, are cherished by the moisture, and transformed into worms of many kinds; as well as into the frogs and toads which inhabit inactive waters. In like manner, from the adjoining soil, other bodies, living as well as dead, are brought down to the marshes by transportation, influx or creeping. And a multitude more in their nests of leaves, fruits and trees, especially those of a bad temperament, as Forestus calls them, such as the yew, fig, walnut, elder, cabbage, hemp, flax, and the like. In addition to all which are to be mentioned, vast numbers of snakes, reptiles and quadrupeds, which, attracted thither to slake their thirst, and falling in, add exceedingly to the foulness and corruption of the waters.

V. As to aquatic insects, they communicate a taint to water even while they are alive; for although they feed upon many things which would otherwise befoul the water, yet they add more contamination to it by their carcasses and discharges, than they do it service; and their remains and excrements falling to the bottom and mingling with other extraneous substances, constitute a principal part of that most offensive and intolerable mud.

VI. From all these foul materials, partly earthy and saline, partly composed of decaying vegetables and animal carcasses; partly too from filth of all kinds, and excrements of insects, is formed that rotten mass which imparts its mischief to stagnant waters, and when aided by a sufficient degree and duration of solar influence, diffuses its venom through the ambient air.



VII. For the sun acting with his rays and heat upon water at rest, necessarily promotes the putrefactive process in the prepared mass of corruption which we have just described. That that is the fact, is evident from the consideration that although these same materials lay all winter in the marshes, there is scarcely any emanation from them until the atmosphere waxes hot in the beginning of summer. This is so much the case, that even at mid-summer in the cold regions of the north, in places under ground, or sheltered from the sun by mountains, there is little or no contamination of the water or air, as we have ever observed in wells and cisterns properly kept.

VIII. The whole action of the sun consists in dissolving, fermenting and decomposing the heterogeneous substances contained in stagnant waters. For the sun is a true fire, and diffuses a celestial and gentle heat around: after the same manner that sublunary fire warms, moves and agitates the bodies exposed to it. Hence it happens that those things which had sunk in the marshes, changing their specific gravities and proportions, rise to the top: bodies which had floated sink to the bottom or work to the sides. There is a new, wonderful and inordinate confusion of the whole, whence many particles of the mixture, that while the ether travelled duly through them, were articulated well together, are now partly dissociated and formed into new compounds. Noxious associations are formed from the impure sulphur and mongrel salts, or to use the common expression, putrefaction or corruption has begun.

IX. This action of the sun is increased very much by south winds, since they bring with them fiery particles from the torrid zone. It is owing to this that marshes sheltered from those winds, are less noxious. Hence also it can be understood wherefore still ponds of water all over Europe during the winter, and even in the summer throughout those countries which are but moderately affected by the sun, either suffer but little putrefaction, or give but small evidence of its having taken place. They are therefore not noxious, because extraneous bodies remain almost motionless in these sluggish waters; on which account they cannot take upon themselves that putrefactive dissolution and commotion which is necessary to engender noxious vapours. The evaporation of water, as well as of moisture from other bodies is promoted by atmospheric heat. By cold, the perspiration of men and other animals, as well as of exhalation

from the earth's surface, is either prevented or diminished. And upon the same principle, marshes, in whose confused mass of sediment and excrement there is a diminished intestine action, emit less mephitic air.

## CHAPTER SEVENTH.

*Wherefore it is that a Stream or Current in the open air impedes putrefaction in waters.*

I. It remains for us to explain how it happens, that waters running in streams under common atmospherical exposure, though they receive great quantities of foreign materials and are exposed to the radiance of the sun, are nevertheless free from the taint of marshy waters. How comes it to pass that the motion of water down declivities and descents prevents putrefaction? Or, what amounts to the same thing, how does rest favour the spoiling of waters? Before a regular answer is given to these questions, it must be understood that by rest we do not mean an absolute, but only a relative quiescence of the particles of water; for we do not presume to deny that the particles of liquids are perpetually undergoing an internal and imperceptible motion among themselves, although the whole mass seems to be at rest in the vessel, cavity, or other receptacle. And it cannot be denied that there is scarcely ever such intire rest in marshes, but that they suffer small agitation now and then from rains, winds, volatiles, insects, or other external or internal agents. And neither of these motions has any effect in lessening the tendency to putrefaction, provided the other circumstances concur in promoting it.

II. These things being premised, there are three principal heads to which the septic tendency of rest may be referred. First, because during rest there is a more easy and vehement fermentation among the particles of mixts. Secondly, because where their liquids are at rest there is a more firm and inordinate cohesion of heterogeneous bodies. Thirdly, because when the same water is there, and no other succeeds it, the collection and admixture of foreign bodies, as well as the action of the sun upon them is continually applied to one and the same section of water.

III. There is no need of many arguments to prove that the fermentation of mixts is more complete during rest than while they are in motion. All the chemists illustrate this

very fact by careful experiments, and proves what reason teaches on the subject of waters. For by rest those particles cannot be discharged and carried away, which excite the intestine commotion, as is known to happen in the free and unrestrained motion by which the waters of fountains and rivers are borne along. In this case the agitation of the water is communicated to the air, and the noxious particles are dissipated as if by the operation of a fan.

IV. Again, during rest there is a fortuitous concourse of many bodies, such as if kept separate and divided would be harmless, but by their mutual conjunction become pernicious. This is evinced in the menstruums and in aqua regia, as it is called, whose separate salts have less activity than the compounds which they form. It is observed also that this greater cohesion of parts exists in sluggish waters, both of those portions which remain at the surface, and of such as are pressed to the bottom.

V. Finally, the flowing of waters, in the motion of which consists the principal antiseptic agency of which we are now treating, prevents putrefaction and its consequences, chiefly in this way, that as the portions or waves of water succeed each other, the identical parcels are not so long exposed to be immersed in them, nor to the heat of the sun. What was yesterday so exposed for example, is to-day withdrawn from their operation; for in their perpetual current one portion passes away and another succeeds it. Therefore, although substances that are actually putrid, or prone to putrefaction should fall into a stream, one of two things will happen, (either of which will guard against corruption) either the bodies will lie on the bottom, and the water run over them, or they will be carried down the stream with it. In the first case it is impossible that the identical water should be always receiving new taints from the rotting materials; in the second, the foul and contaminating articles being washed away, the succeeding sections of water are in no respect affected by it.

Neither of those circumstances occur in marshes, whose waters are incessantly in contact with the corrupting substances, nor can they free themselves from the mischief within them by any removal or departure: wherefore by a perennial and long continued maceration kept up and perpetuated by new substances falling in and adding to the mass, the fermentation is continually on the increase, and the slug-



gish waters become vitiated and foul by the envenomed exhalation and commixtion.

#### CHAPTER EIGHTH.

*A Corollary from the foregoing doctrine. The maceration of flax in water is sometimes harmless, but mostly pestilential, and the reason of this.*

I. FROM what we have stated concerning the effect of motion in preventing the corruption of water, and of rest in bringing it on, it will be easy to settle that famous controversy among writers, which has been agitated with no small bitterness of temper and expression. This dispute was on the question whether the water-rotting of flax and hemp was noxious and pestilential, or entirely harmless?

II. Authors of great character have condemned the waters in which flax and hemp have been soaked as dangerous to drink. Hence, among the English a heavy penalty is inflicted for putting flax or hemp into any well, pond or other public receptacle of water where flocks and herds of cattle are accustomed to drink. Those plants while under maceration are complained of likewise as emitting pestilential air, in the highest degree injurious to human life. Among those who support this opinion, are Hyacinth Alphesius, who also quotes the authority of Avicenna himself, Peter Forestus, Peter Salius Diversus, Lewis Septala, (who although he does not charge the maceration of flax with being the cause of plague; yet he boldly asserts that where it happens in an atmosphere too moist and hot, it very readily excites putrefaction) Alexander Benedict, Lazarus Rianius, P. Kircher, P. Zacchias, Card. Gastalde, and Diemerbroeck, and they hesitate not to say that these aërial vapours may become the causes of pestilential fevers and of the plague itself.

III. On the contrary, the maceration of flax and hemp are vindicated from every suspicion of infecting the air, by Peter P. Pereda, who states the cases of many cities in Spain, in the vicinity of which much hemp is sowed and soaked, while the inhabitants enjoy health and arrive at old age. I wonder, however, that Pereda when he quotes Avicenna on his side, makes no mention of hemp or flax in the quotation of the text, since in another place Avicenna remembers it, and states his sentiments in these words: *And*

*these are the causes which promote putrefaction, among which is the air of puddles and macerating holes, where such things as flax and asphaltum are acted by the water. What can be clearer than this?*

IV. And even within my memory, obstinate and reproachful disputes have been carried on between the physicians of Naples about the Lake of Anio; one party contending that the epidemic constitutions around Naples in these days were to be ascribed to the water-rotting of hemp and flax in that lake, and the other excusing that process from all manner of harm.

V. On considering and weighing all these things it appeared to me that both sides were to a certain degree in the right, upon the principle of water in motion and water at rest, as explained in the preceding chapter; for no person can doubt that the before-mentioned maceration would be wholly innocent where there was a free and constant current of water. As the different portions of water constantly succeed each other, the same parcel never remains long in contact with the flax and hemp. This is the case with the bundles of those plants which are tied to the banks, sunk near the margins, or depressed into the hollows of running streams. And these are the examples of the rotting of flax and hemp, in which they say no severe disease is excited. A great authority on this point is Gomerius Pereira, who relates that in France and some provinces of Spain a vast quantity of flax is macerated in the streams every summer without occasioning a plague. In explanation of this it may be remarked, that the maceration is pestilential where swampy waters have long settled and the winds are rare; or where to quicken the rotting of the flax by aid of fermentation, water is drawn off from the brooks into ditches, (as is usually done) for the purpose of being kept long undisturbed; for it often happens, and we can never sufficiently lament it, that the public good is sacrificed to the love of gain, insomuch that what is at first done to the detriment of the people, only with the greatest caution, is afterwards rewarded and openly justified.

VI. They, therefore, who think the soaking of flax is noxious, are to be understood as meaning stagnant water, and air; and they who have pronounced them harmless, as meaning running water. And indeed there are reasonings, facts, and authorities in points on both sides. And of this difference between resting and running water, as applicable

to the present discussion. I had myself an opportunity of judging, at Civita Vecchia, and the neighbouring river, while the rotting of flaxing was going on. In the former place, the inhabitants were cut off, because the flax was rotted near the city, in the stagnating water of ditches. This malady will be described in the second book of our epidemics. At the other place, no damage was sustained, because there was no stagnation in the water where the flax was put to soak. This is therefore a matter of great importance to the health of the people in every place.

## CHAPTER NINTH.

*What it is that sluggish waters emit during hot seasons, of a quality injurious to the neighbouring inhabitants; according to the opinions of the Ancients.*

I. MARSHES have afflicted mankind from the earliest times; whence the Greeks designated their mischievous effects by fabulous narrations, and stories of monsters, to inspire the people with a salutary dread of their horrors. Hence have arisen the fictions concerning the *Water-Snake*, and the *Hydra*, which names derived from the word which in Greek signifies water, were employed to denote the beasts and serpents of the marshes. Hence, likewise, those fables which have been invented concerning the monster *Python*, slain by Apollo; the very name being deduced from the Grecian root which means putrefaction or corruption. What however the thing exactly was which exhaled from marshes, (considered as a philosophical rather than a poetical question,) contaminated the atmosphere, and annoyed the people; was a subject upon which the ancients indulged a variety of opinion.

II. Among the Latins, we read that M. Varro speculated on this subject, and ascribed the mischief to swarms of insects. "*It is worthy of remark, he writes, in marshy places, that as they dry up, there are produced certain very small animals, too minute for observation by the eye; which being taken into the body by the mouth and nostrils, are the cause of difficult diseases.*" The ground-work of this opinion seems to have been laid by Lucretius, where he sings of physical truths in poetical strains; *all bodies are liable to putrefaction; and animated insects sprung from that corruption.*



III. Not unlike the opinion of Varro, was that of Columella; who writes, "*That a marsh ought not be in the neighbourhood of buildings, nor near a military way, because when acted upon by heat, it ejects a baleful poison, and engenders animals armed with troublesome stings, which settle upon us in the thickest swarms. Then too, it emits the venomous hosts of water-snakes and serpents, freed from their winter's slime, mud, and fermentative colluvies. And from these, there arise frequently obscure diseases, whose causes have not been investigated even by physicians.*"

IV. Palladio has expressed himself in nearly the same terms, where he says, "*A marsh is to be avoided upon every principle, especially on the south or west, or if it usually dries up in summer; because it generates pestilence and hostile animals.*" The leading idea, in which all these opinions agree, is this: that worms chiefly emitted from marshy waters, and entering into human bodies, wrought in them mischief and ruin.

V. Vitruvius has given a somewhat different explanation of this matter, where he teaches, "*That the vicinity of marshes ought to be shunned, because, when the morning breezes reach the house, with the rising sun, they bring with them mists and exhalations tainted with the poison of the marshy brood. And this mixture of venom with fog, is conveyed by the winds to the bodies of the inhabitants, and renders the place pestilential.*" Thus Vitruvius does not ascribe the mischief to the marshy animals, insinuating themselves into the bodies of the inhabitants, as Varro and Columella thought; but to the blasts, exhalations and expirations proceeding from those creatures chiefly.

VI. Notwithstanding these ancient writers have delivered many things which are conformable to nature and truth, these doctrines of theirs are to be more clearly unfolded, and illustrated by facts and reasonings. This task we shall attempt in the following chapters; and this the more diligently, because almost all the Galenics down to Sermertus, comprehending the universal noxiousness of muddy and swampy places, under the naked words, evaporation, exhalation, and emanation, have ascribed them to certain poisonous qualities. But those terms, when you divest them of their shell of words, have scarcely any kernel left, to refresh the hungry and disappointed reader.

(To be continued.)

*Fishkill, September 11th, 1809.*

" WORTHY SIR,

" IF you think the enclosed case of surgery, coming from a student, may afford any useful hint relative to the healing art, you are at liberty to give it a page in that very valuable work the *Medical Repository*.

" ISAAC V. VAN VOORHIS."

HON. SAMUEL L. MITCHILL.

*A CASE of CANCER, wherein AMPUTATION was successful.*

THE propriety of disclosing any thing which may have a tendency to add a mite to the knowledge of any medical or surgical subject, is here offered, by a student of medicine, as an apology for troubling the public with the following case of cancer.

William Wright, Esquire, about seventy-three years of age, had been afflicted near nine years with an *open* cancer upon the back of his hand. The disease at first appeared in the form of an indurated tumour, about the size of a common wart. This afterwards ulcerated and spread by degrees, until it occupied and destroyed all the back part of the hand ; and, for these two years past, his whole hand has been completely disorganized, and his health greatly impaired.

A few months since, Dr. White, my preceptor, was called, and found the patient in this situation. The whole metacarpal bones were in a state of perfect *caries* ; the back part of the hand was covered with a preternatural dark-coloured *fungus* ; in the middle of which was a deep-seated phagedænic ulcer, discharging a brown fetid *ichor*, for the most part tinged with blood. In a word, the whole hand assumed the appearance of a black disorganized mass ; from which issued an indescribable fetor, infecting every part of the house, and nauseating the strongest stomach that approached it. The patient's general health was greatly impaired ; his body emaciated ; his strength prostrated ; his nights restless ; his days painful ; and he himself confined to his bed, with difficulty obtaining a little sleep by the assistance of opium.

The patient, tired of such a situation, and despairing of cure from any application, requested his physician to remove his hand. As no application whatever had at any time been used, (the patient always being opposed even to

have the ulcer examined) the doctor considered it a duty first to try some milder remedy. He accordingly recommended some applications, in the form of poultice, which might in some measure palliate the disease, and render the patient's situation less intolerable. Among them, through the advice of the consulting physician, was the root of *dock*, (the *rumex acutus* of Linn.) which has held a place among the specifics in the cure of cancer, but which did not, however, appear to possess curative powers in any degree superior to those of other similar applications.

The ravages of the disease yet progressing, and the patient's situation becoming still less tolerable, his entreaties for the dismemberment of his hand became more earnest. Every prospect, both of palliation and cure, being now obscured, amputation was considered the only alternative; and the patient's wishes on the 15th of July were gratified. The operation was performed in the usual manner, by Dr. White, about midway between the elbow and wrist. Nothing of a peculiar cast occurred; the pain subsequent to the operation was no greater than usual, and the anodyne immediately administered rendered the patient's situation tolerably comfortable. In a few days, by taking 30 drops of laudanum at night, which had long been indispensably necessary, he rested perfectly easy, and continued to do so, although his opiate, at the expiration of a fortnight, was discontinued. With pleasure we add, he is now, about four weeks from the operation, well: the stump is healed, and good health restored.

Relative to the mode of treatment subsequent to the operation, we have to observe, that about the third day from amputation, no high inflammation of the stump taking place, and no symptoms of an inflammatory diathesis of the system arising, the patient was put upon bark and wine. This tonic plan was closely pursued throughout the cure; the patient at first taking about half an ounce of Peruvian bark and half a pint of wine in the course of a day; which quantity was found to be as great as his feeble system would bear. As the cure progressed, the dose was gradually diminished. A healthy discharge from the wound was soon induced, which shortly effected a cure.

From the success of the above treatment, may be inferred the good effects of tonics upon the systems of old people in the cure of ulcers. Their utility in these cases, when their exhibition is not contra-indicated by inflammatory symptoms, either local or general, is too great to be dispen-



sed with. Why is it less easy to heal ulcers in old than in young subjects? Is it not because there is a deficiency of energy in the systems of the former? Then how necessary is it to supply this defect of nature by artificial means! In the above case, it was probable that there was not much natural energy in a system, worn down by age, and reduced, by the most obstinate of all diseases, to a mere skeleton. Is it to be presumed, that under these circumstances there was natural action enough to heal the stump of an amputated arm in four weeks? Such a supposition would be unwarrantable indeed. In healing ulcers in old persons, and especially those consequent to capital operations, the greatest attention should be paid to stimulus: no time should be lost in assisting the efforts of nature; the powers of life in old age are languid, and unless they are artificially supported, they will sink under the discharging of extensive ulcers.

It may not be amiss to offer in this place, a few remarks upon the disease called Cancer.

This affection has justly been considered the most obstinate of human maladies, and perhaps not improperly termed the "*opprobrium medicinæ*." About the nature of this disease, practitioners have differed in opinion: some have asserted that it invariably proceeds from some general disorder of the system; others contend that it always arises as a mere local affection. The former, in support of their opinion, have said that extirpation in the disease is unsuccessful; the latter impute the failures which do take place from extirpation, to the delay in operating; and say that the disease becomes general from local absorption only. According to the former opinion, extirpation would always prove abortive; according to the latter opinion, it would prove certainly successful in the early stages only.

Theoretical opinions are only to be established by facts, and the above case stands as one, in favour of that which views cancer originally as a mere local affection. Nay, if no relapse should take place in the above case, of which at present there is not the slightest appearance, and of which, from the readiness of the stump's healing, there is little future probability, it would seem to authorise the opinion, that a cancerous taint of the system, does not take place even from absorption; nine years being a length of time abundantly sufficient for the absorbing process to take place. Be this as it may, the above case, at present, certainly authorises the

practice of extirpating cancerous affections even in the last stages of the disease; and if extirpation, or amputation, prove effectual in the advanced, what may we not expect from these remedies in the incipient stages of cancer?

We shall take the liberty of adding a few words relative to the operation of *amputation*.

Removing a limb is justly considered as a dreadful operation; but it is sometimes the ultimate alternative, the only means of preserving life. From its seeming severity, and from its mutilating effect, prejudices are often imbibed against it, which prove injurious to society. It is generally considered as more dangerous and inefficacious than it really is; and many an useful life, no doubt, is sacrificed to such unjust fears and apprehensions. The operation itself is neither so hazardous nor ineffectual as is generally conceived. The danger arising from the operation alone, is trifling; and its failures, in curable diseases, are more owing to unwarrantable delays in performing it, than to any thing else. In the above case, we see a man who had passed the common age of man, whose health was extremely impaired, and whose powers of life were fast sinking under the most incurable disease, brought, by means of amputation alone, in the short time of four weeks, to the enjoyment of good health! And will it be said, that the same remedy will prove unsuccessful upon those who are strangers to old age, and whose powers of life are in full bloom? Cool and unbiassed reflection upon this subject, may be of value to the community.

A SUCCINCT ACCOUNT of the CYNANCHE TRACHEALIS, OR CROUP, as it appeared A. D. 1796, 1799, 1803, and 1808.  
By JOB WILSON, Physician in Hanover, N. H.

**I**N the year 1796, I saw several cases of Croup which I think all terminated fatally: nine or ten children died with this disease in one small vicinity.

In the year 1799, I had a case of the Croup, in which the symptoms were the following, viz. the face retained a deep blush; the pulse full and hard; inspiration laborious and difficult, attended with a peculiar ringing sound, as though the trachea was dry and hard; the skin hot and dry; the thirst great.

Phlebotomy, epispastics, and emetics were prescribed. The blood drawn from the arm had a peculiar buffy appearance, similar to that discharged in scarifying the amygdali, in Cynanche Tonsillaris. The quantity drawn was two ounces: the child was aged two years. After the bleeding, respiration was much mended, the pulse softer; the emetic operating, produced some moisture on the skin, and some expectoration took place. These favourable symptoms continued about six hours, after which the fever increased and every symptom was aggravated; the face became swoln, and of a purplish hue; the breathing extremely difficult; the eyes fixed and staring, and the patient died, in appearance, by suffocation.

At this time I was unacquainted with the good effects of calomel and seneka in this disease.

In the year 1803, I had two cases of this disease.

Case 1st. The patient was in the last stage of the disease, incapable of swallowing any medicine, and died in about one hour after I visited him.

Case 2d. I was called to the patient in the first stage of the disease. She had all the symptoms in the case first described. I first prescribed seneka to the quantity of a table spoonful once in three minutes, but this had not the desired effect. The disease increasing, and all the symptoms being aggravated, I expected a sudden and fatal termination of it; but being determined while the power of deglutition continued, to give a faithful trial to all medicine that promised to be of advantage, I immediately added tart. emet. and calomel to the seneka, and applied a large blister to the thorax. These had the desired effect; the tart. emet. added to the seneka produced full and frequent puking, at which time perspiration was restored, which with the other evacuation, (particularly the calomel, which operated as a brisk cathartic) greatly diminished the heat of the system. A dissolution of the forming membrane in the trachea was of course effected and expectorated, which produced a final solution of the disease; but notwithstanding these favourable appearances, the disease shewed a disposition for two days to renew its attacks, for which reason I continued the use of the seneka and calomel as occasion required.

In the year 1808, four cases have occurred.

Case 1st. A child aged two years, of a full robust habit. He was attacked in his sleep, without any previous symptoms. The disease was alarming when I first attended



him. I prescribed the same medicine as in the case last mentioned, and it appeared to have the desired effect; but by not continuing the emetic, frequently enough to keep a permanent sickness, my patient soon relapsed, and had all the symptoms as described in the last stage of the disease, except the purplish hue in the face and extremities. His face became swoln, eyes fixed and staring, respiration extremely difficult, and immediate suffocation threatened; as he appeared incapable of taking medicine, and as I apprehended that there would not be time for it to operate, I immediately let blood from the jugular vein to the quantity of four ounces. The blood was discharged at a large orifice and in a full stream. It produced a paleness of the face, and reduced him almost to fainting. After the bleeding he lay easy, with a serene and composed countenance. The breathing was greatly relieved, and every symptom mitigated. While the vessels were contracting to re-produce the disease, I obtained an important truce, during which I first administered a table-spoonful of a strong decoction of seneka every two minutes, and 1-2 gr. of calomel to 1-4 gr. of tart. emet. once in five minutes. These not succeeding, in twenty minutes I added ipecacuanha in considerable doses, which soon had the effect, and produced puking. I continued the calomel once an hour till it operated as a cathartic, and after that once in four hours, to the quantity of 1 gr. to the dose, and gave the seneka once in ten minutes. Immediately after the bleeding I applied a blister, which reached from the top of the sternum to the scrobiculus cordis, and another of nearly the same size on the spine immediately opposite. This treatment exceeded my utmost expectation, and produced a complete solution of the disease. The medicine was continued for two days, but the time of giving the doses was lengthened, and the quantity diminished according to circumstances.

To the above medicines were added *oleum ricini*, as a cathartic, and *oleum olivar.* as an emetic and expectorant.

Case 2d. was alarming, but was cured by the above treatment, with the exception of phlebotomy.

Case 3d. was the mildest of the three, and yielded more readily to the above treatment.

Case 4th. The patient could not be considered as a subject of medicine. It was in the last stage of the disease when I was called, and died in thirty minutes after I saw it.

Since writing the above, one case has occurred which terminated favourably.

If the above in your judgment shall appear to be of use in conducting the treatment of this disease, you will please to give it a place in the Medical Repository.

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*An ACCOUNT of the YELLOW FEVER, as it appeared at STABROEK, in the COLONY of DEMARARY, during the principal part of the years 1803 and 1804. By Dr. WILLIAM FROST, physician at that place; addressed to Dr. JEREMIAH BARKER\* of Portland, and by him communicated to Dr. MITCHILL.*

(Continued from Page 152.)

*The following were the appearances of the Viscera, from repeated Dissections.*

THE brain, in several persons whom I dissected, where the sensorium had been much deranged, accompanied with a permanent dilatation of the pupils of the eyes, was considerably inflamed, but more particularly its meninges. In some the blood-vessels of the brain were unusually distended; in others extravasated blood and serum were found in its ventricles and between its lobes, to the amount of several ounces.

In the *thorax*, the *lungs* appeared in an inflammatory state in a few, but I never saw any *adhesions*. Again, they were remarkably livid, especially in their posterior portions; and in some, livid or purple spots appeared on the anterior parts only. Whether this livid appearance in their posterior portions ought to be attributed to the effects of inflammation in all cases, or to blood accumulated there after death, in consequence of gravitation by the horizontal posture of the body peculiar after death, is a question I shall not pretend to decide: but I am strongly inclined to believe, it is more frequently occasioned by gravitation of blood, than from inflammation and its consequences; as subjects frequently lie twelve hours after death, before dissection is performed, which gives an opportunity for it to gravitate there. In no one instance did the texture of the lungs appear essentially injured; but in most cases there was an uncommon turgescence of blood in the vessels of these important organs.

The *heart* and *pericardium* appeared natural for the most part. In some the coronary vessels of the heart were unnaturally distended with blood. In one instance an unusual quantity of serous fluid was contained within the *pericardium*.

In the *abdomen* the *liver* was the most frequently found in a diseased state. In most of the subjects that I dissected, the external membrane of this viscus was either in an inflammatory or gangrenous state, which sometimes penetrated into the substance of the liver, more especially its posterior convex portions. It was sometimes found preternaturally enlarged, of a deep purple or livid complexion, and again remarkably indurated. The *gall-bladder* was found empty in some; and in a few contained a dark green, ropy bile, but generally was distended with a black, thick matter, resembling *molasses* or *tar*.

The *stomach* appeared in its natural state in a few cases. Most frequently it was inflamed or gangrenous and sometimes sphacelated. The villous coat was overspread with a *black matter*, or contained a fluid resembling black vomit; and sometimes it contained simply what had been last received into it. Extravasated blood was sometimes found there. In two dissections the texture of the stomach was nearly all destroyed, by sphacelation. Some parts of the *intestinal canal* were often found inflamed, and again in a gangrenous or mortified state. In some it was not at all diseased. The *duodenum* sometimes contained a black matter resembling the liquor found in the *gall-bladder*. I saw only two cases of uncommon distention with air in these organs.

The *urinary bladder* was sometimes contracted to a very small size, not larger than a hen's egg; but it seldom appeared in an inflammatory state.

The *spleen*, *pancreas*, *kidneys* and *omentum* generally appeared as in health. The spleen, however, was a little enlarged in two or three cases. The superior or upper portion of the *mesentery* was found covered with gangrenous spots in one instance.

The *blood* found in the *heart*, *arteries*, and *veins*, was almost always unnaturally dark and fluid.

#### MODE OF CURE.

If inflammatory symptoms prevailed in the first stage, it was my practice to open a vein immediately. *Phlebotomy*



was often requisite, if the symptoms were not of the severest kind, especially if the patient was young, robust, and full of juices, and had not been a resident long in the colony, or had been accustomed to animal food, wine, &c. This operation reduced the violence of arterial action, and thereby prevented the destruction so peculiar to the vascular system, which so generally supervenes when Phlebotomy is neglected; as likewise the effusions or extravasations of blood and serum in the cavities of the brain, as well as in some of the other organs of the body, which so frequently occur; as has been made manifest by dissections. The violent hemorrhagies from the nose, stomach, anus, &c. convulsions and the like, are in my opinion occasioned by the violence of *re-action* in the sanguiferous system, and might often be prevented by timely and copious blood-letting. But it was not practised in the reiterated and copious manner found expedient by the celebrated Dr. RUSH, in the city of Philadelphia, in the year 1793. One copious bleeding in the incipient stage of the fever, or two small ones in some constitutions, were productive of the happiest effects; and frequently the addition of a brisk cathartic rendered the subsequent stages of the disease very mild, when before these evacuations the symptoms threatened the patient with its most malignant form. The salutary effects of phlebotomy in removing constipations of the bowels, and aiding the operation of cathartics, appeared obvious in two cases as remarked in my note book; where the mate and one of the sailors, belonging to a brig from New-London, in Connecticut, had attacks of the yellow-fever, and each of them had taken three full doses of *Jalap* and *Hyd. muriat. mit.* within the first twelve hours from the onset of the fever; besides drinking a considerable quantity of a decoction of senna, manna, and acidulated tartrate of potash (*crem. tart.*) without producing one operation in either of them. As medical assistance had not been called before to see these persons, and only advice given; I was now requested to visit them on board, and found their symptoms to require immediate blood-letting; and while the blood was flowing from the mate's arm, he called for a bucket, and nearly filled it at one operation. The factor from it was so intolerable, that he could scarcely bear it himself. The fecal matter was of the complexion of tar. The other man's cathartic operated in half an hour from the time he was bled, and the feces assumed the same characteristics the mate's did, as the Cap-

tain afterwards informed me. The oppression at the præcordia, pains of the head, loins, and extremities, subsided as the blood flowed from the arm in both cases. They however had a long convalescence.

The quantity of blood to be taken in that country, ought, as in all others, to be regulated by the forms of the disease, whether mild or malignant; by the seasons of the year, as a patient will bear a much greater loss of blood in a wet than in a dry season; as also by the age, strength and habits of the patient.

It was extremely hazardous to bleed, when the fever had advanced to its second stage. I always laid the lancet aside, when that was clearly ascertained.

A gentle moisture was perceptible on the surface, after the loss of blood in most cases, which I always endeavoured to encourage by giving warm teas made of *balm*, or *Virginian snake root*; a little acet: of ammon: (*spir: minder:*) being added to it. Sometimes a beverage made of acidulated tartrate of potash (*crem: tart:*) answered the double purpose of sweating and purging. This moisture, however, frequently ceased of a sudden, and was succeeded by a glowing heat.

As soon as the patient was let blood and sometimes before, I gave him a cathartic of *jalap* and *hyd: muriat: mit:* apportioned to his constitution, age, violence of the disease, &c. in the form of powder or pills as was most agreeable to him. The operation of this was assisted by a weak decoction of *senna*, *manna*, and *acid: tart. of potash*, or a cathartic mixture of *ol: ricin.* and *tinc: sennæ comp:* If the jalap was not easily retained in full doses, it was divided into smaller ones, and frequently a little nitrate of potash (*sal nitri*) was joined with it. Sometimes the stomach would not retain either; and then pills made of *hyd: muriat: mit:* only were exhibited in doses from 15 to 20 grs. The specific gravity of that, prevented its being so easily expelled from the stomach, by its spasmodic efforts. The peristaltic motion of the bowels, in several instances, was so torpid, that the most drastic medicines conjoined with those just enumerated, such as *scammony*, *gamboge*, *aloes*, &c. did not operate, until aided by cathartic injections.

Tartrate of soda, (*sal Rochell.*) Sal Epsom. and Sulphate of soda (*sal glaub.*) were sometimes administered in a decoction of *tamarinds*; but in general the stomach would not retain them.

Frequently after the object of purging was sufficiently ob-

tained and a vein had been opened, the disease put off its threatening aspect and the patient became convalescent. At this moment the *bark* was indicated, and doses to the amount of a common tea-spoon-full given every hour in a glass of *Madeira wine*, for one or two days, completed the cure.

These remedies were frequently of avail even among sailors and soldiers who were attacked in the most violent forms.

In cases like these, the proper time for blood-letting, was within the first 24 hours from the onset of the fever. If the patient had taken the proper remedies to excite purging without effect, or even with; and no remission of the fever followed; or if the vomiting had been so violent from the attack, that the patient could not retain medicine of any kind; it was frequently my practice, even when the time for venesection was passed, *to bathe the patient in cold water*, in the following manner. He was either immersed naked in a large bathing tub, filled with cold water, or three or four buckets of the coldest water were suddenly dashed on the patient's head and shoulders, while he stood in an erect or was in a sitting position. He was immediately after wiped dry and wrapped up in thick blankets or flannels and put to bed; and warm teas, *lemonade* or *sangrie*\* was then copiously given. If the stomach was too irritable for these drinks, I gave him ten drops of *laudanum* in a spoonful of tea; for frequently a larger dose would throw the patient into violent vomitings.

If this operation did not produce the effect of exciting perspiration, it was repeated in an hour, and so on from one to every four hours, until that object was obtained; and then I desisted until the perspiration had subsided. As soon as a slight moisture made its appearance on the surface, the vomiting generally ceased, the spasmodic affections were lessened, the pulse become less frequent and more soft, and the patient felt himself better in every respect. When the sick person happened to be convulsed, and when continual vomitings, hiccups, &c. were present, I thought it advisable to wash the head, neck and breast with a little warm water first; and then immediately turned several buckets of the

\* This is a beverage composed of Madeira wine, water, and loaf sugar, and nutmeg grated on it: two equal parts of the two former and a sufficiency of the latter to render it palatable.



coldest water over the patient. After which, I have given the *tingt. castor. or laudanum* in small quantities.

This practice persisted in, I have had the pleasure of seeing several of my patients recover, who had been given over as lost.

*Pediluvium* and *ablution* with tepid water or soap-suds all over the body, or with a sponge dipped in cold water, or lime-juice and water, were very grateful to the patient and often productive of a diaphoresis.

When the irritability of the stomach continued, with a hot dry skin, quick pulse, &c. the following *febrifuge mixture* was wonderfully efficacious in removing or *neutralizing* the noxious matter in the stomach and alimentary canal. *R Carbonate of potash, (sal absinth.)* ʒss. *ol. menth. pip. et ol. pulegii,* ā. ā. gutt. v. *Solution of quick-lime in water,* lbiii. m. The patient was directed to take a wine-glass-full of this in any vehicle most pleasing to the palate every four hours; and at the second dose, I have known it to arrest violent cramps of the bowels, render the body soluble, change the complexion of the tongue from a dark brown to a yellowish cast, and produce a general warm sweat on the surface. *Blisters* were applied with efficacy to the head, between the shoulders, to the hypochondria and the epigastric region, when lethargy, coma or delirium were present; or when the patient was tortured with vomiting or pains of the bowels. They were also of manifest utility when applied to the extremities in the atonic stages of the fever. *Sinapisms* applied to the soles of the feet, ancles or wrists, were also beneficial.

(To be continued.)

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Outline of PROFESSOR MITCHILL'S LECTURES ON NATURAL HISTORY, in the College at New-York, delivered in 1809--10, previous to his departure for Albany, to take his seat in the Legislature of the State.

THE subjects of this extensive course are divided into distinct heads, after the following arrangement: He begins with the history of the earth, as a planet or integrant portion of the universe. I. It is divided into four parts: 1. COSMOGONY, embracing the doctrines relative to the origin of the world. 2. GEOGNOSY, or the account of the changes it has undergone in the chaotic state, during the deluge, and since that event. Its constituent parts viewed under five divisions; (a) PRIMÆVAL, or such as were formed at the crea-

tion, or deposited from chaos immediately after, such as syenite, topaz-rock, quartz-rock, primitive flint, slate granite, gneiss, micaceous slate, argillaceous slate, serpentine, with primitive lime-stone, gypsum, and trapp. (b) TRANSITION, or such as were formed when a further subsidence from the original medley of things, took place, of which, transition-lime-stone and trapp, grey wacke, flinty slate, and transition gypsum, are examples: (c) FLAT OR SECONDARY, to wit, sand-stone, low stratified lime-stone, gypsum and trapp, rock-salt, chalk, and coal: (d) ALLUVIAL, formed more recently still by settlement from water, constituting the bottoms of valleys and level spaces between mountains, as well as the chief constituents of widely extended plains. (e) VOLCANIC, or the products of subterraneous fire, comprehending lava, slag, ashes, scorix, &c. In this arrangement he follows the system of the distinguished German, professor WERNER. He is a firm Neptunian, and examines at great length the operation of water in giving configuration of the globe. 3. MINERALOGICAL CHEMISTRY, or an explanation of the properties of matter, attractive and repulsive, by which its different forms and modifications are effected. 4. PHYSICAL GEOGRAPHY, or an account of the actual condition of the globe, as to land and water, mountain and valley, continent and island, mine and surface. This section of the course is denominated GEOLOGY.

2. The history of LIGHT, as the most copious of created existences, and occupying the widest space in the universe. It is considered as a body rendered fluid by means of heat or caloric, like other bodies, and like them, giving out its heat on its decomposition. A review is given of the modern discoveries by Bancroft, Herschell, Ritter and Wollaston, rendering it necessary to enlarge and reform the doctrines of Newton, and inclining him to the belief that the sun-beam consists of two ingredients, *colour* and *caloric*. Hence is deduced a theory of Colour and Heat as evolved from light by its decomposition, and imparting to every thing its proper hue and temperature. White is considered a chemical, and black a mechanical assemblage of all colours; and Rumford's considerations on the black clothing, furs and skins of animals, and on the black coating of other bodies in relation to heat, are exhibited to strengthen this argument. The analogy between light and sound is traced, to shew the doctrine embraced by some, that impulse or vibration may be of great efficacy in bringing about

the phenomena of light. This part of the course is termed **PHOTOLOGY**.

3. Heat is next considered, and its natural history attempted. A great source of it is the sun-beam, or chemical compound of colour and light. Another copious source of it is the oxygenous fluid of the atmosphere, or phos-oxygenous gas as it ought to be called. If the sun-beam becomes associated with oxygen, it forms the compound erroneously called oxygenous air. It is really a solution of oxygen in fluid light, and on the resolution of this compound into its constituent parts, heat, light, oxygen and colour come forth. After considering the mechanical and chemical theories of fire, a preference is given to Pictet's arrangement of the facts under four heads, to wit, the free, latent, specific and fixed forms of heat. Its effects are considered as producing contraction, expansion, liquidity, fluidity, fusion, and as the great stimulus to vegetable and animal life. The plutonic hypothesis is examined and rejected. This branch of the course is called **PYROLOGY**.

4. The history of water is the next subject of Professor M.'s discussion. It is the great agent in effecting the changes the earth has undergone. The proofs are stated of its having covered the mountains, and of its separation from the materials with which it was anciently blended, forming thereby the stratification illustrated under the head of Geology. Reasons for supposing the waters of the globe to have undergone a diminution; 1. in the formation of crystalline bodies; 2. in the constitution of the atmosphere; 3. in the formation of plants; and 4. in the organization of animals. By these processes an immensity of the water which existed at the flood is converted into solid forms, and a correspondent shrinking of the ocean has ensued. In these natural and easy ways, is the problem solved, which the ingenious Jamieson gives up in despair, that is, what has become of the surplus water that once deluged the world? The primitive inundation having thus subsided, the question is examined, whether the quantity of water is yet diminishing, as some of the modern philosophers think considerations are offered in favour of such a belief, in consequence whereof preparation is making for the final consummation of terrestrial affairs by fire. Waters apparently rushed from the south, according to Kirwan's doctrine. Questionable whether water can be decomposed as the fashionable chemists think, and whether it is not an element as



the ancients and Priestley contended. It is divisible into three historical sections. 1. Salt water, such as saline or briny fountains, the ocean, the Mediterranean, Euxine, Caspian, and Judean seas; and the Nitrian and Mexican lakes. 2. Fresh water, such as the fluid of rain, dew, snow, and hail; spring or fountain water; river water, and the liquid of the great American lakes, as well as of many more inland collections of water. 3. Mineral water, such as the acidulous springs of Ballstown, charged with carbonic acid; the sulphureous springs of Clifton in Ontario county, exhaling hepatic gas, and depositing brimstone; the thermous springs of Lebanon, which are of a temperature fitting them for an exquisite bath; the chalybeate springs of many places in our granite country. These inquiries, with a multitude of explanations concerning tides, currents, alluvions, and solutions, are distinguished by the title of **HYDROLOGY**.

5. The globe having been thus viewed as to its geological structure, the effects wrought upon it by light, heat, and colours, and lastly in respect to the alterations it has sustained by means of water, the next view taken of it relates to its atmosphere. The idea of Lavoisier is here adopted, that every thing which the heat of its surface can convert to air or gas, makes a portion of the sphere of vapours encircling our planet. In order however to comprehend the real constitution of the atmosphere, a wider range is taken; for its materials as we find them are divisible into two classes, the mechanical and the chemical. To the mechanical ingredients of the atmosphere belong dust, sand, leaves, soot, carbone, ashes, and whatever wind and fire can elevate; such as metallic particles, earths and alkalies, and sea-salt in maritime situations. Diffusion of odours, and the particles emitted from the materials in tradesmen's and manufacturers' shops, all add mechanically to the volume of the atmosphere, as do exhalations from an infinity of other subjects. The chemical materials of the atmosphere are principally four gases: 1. Azotic gas. This is probably the oldest portion of the atmosphere. It is the easiest to volatilize, and the most difficult to condense; and therefore in all likelihood rose soonest out of chaos. From its azotic and aphlogistic character, it is exactly adapted to the reign of night and death, when darkness hovered over the face of the deep. There is reason to suppose it a metal existing ordinarily in a gaseous state, as quick-silver in common temperatures melts into a fluid; and its metallic constitution

renders it a good conductor for electricity. By the last experiments, it is found to constitute almost four fifths of the atmosphere, or at least 783 parts of a thousand. 2. Oxygenous gas: This would seem to have made its appearance next, being first evolved from water by acute and cuspidated bodies of all kinds. These exist on the plants which may be supposed to commence their growth in the ocean, or under water, and to have added to the sum of oxygenous gas. Afterwards terrestrial vegetables sprouted up on the dry land, and added further to its quantity. Thus the atmosphere appears to have been gradually and duly prepared for the creation and nutrition of animals. Oxygenous gas makes up the chief residuary portion of the atmosphere; or as the latest analyzers say, 210 parts of a thousand. 3. Carbonic acid gas: This is affirmed to amount to about four parts in 1000; and consequently does not impart much distinctness of its character to the atmosphere. It however exists in various places, as in certain wells, mines, vats, vaults, caverns, and places where it is compounded or evolved in different processes.

The relative weights of these three gases are, that oxygen gas is rather heavier than azotic, and carbonic acid gas possesses greater weight than either separately, or than both in their atmospheric mixture. 4. But there is a fourth gas called inflammable air, which by reason of its numerous affinities and its trifling specific gravity, is capacitated to act a remarkable part in the atmosphere. Experimenters declare that it naturally exists in the atmosphere to the small amount of 3 parts in 1000. Its specific gravity is so moderate that a cubic foot weighs only 41 grs. twenty-six hundredths, while the same quantity of oxygenous weighs 1 oz. 1 dr. 51 grs. of azotic 1 oz. 0 dr. 39 grs. five hundredths, and of carbonic acid gas 1 oz. 4 dr. 41 gr.

Professor Mitchill has always entertained an opinion favourable to the existence of an element in nature which might be called phlogiston. He pronounced a warm eulogy upon the genius and merits of professor Stahl; and he commended the resolute spirit of Priestley, who expired bearing testimony against Lavoisier and the Neologists of France, and their proselytes. M. had expressed his sentiments against the part of their nomenclature which insisted on the unity and simplicity of sulphur, phosphorus, and the metals as long ago as 1798: and he proposed in a chart of chemical nomenclature, which he published in 1802, to strike out hydrogen altogether, and substitute phlogiston in its

place. This amendment he actually made, and has adhered to it ever since. The fault of the phlogistians heretofore had been that while they were generally right, they were particularly wrong. By not defining specifically what their phlogiston was, their adversaries got the advantage of them, and when these expunged the very name and inserted hydrogen in its place, the phlogistians were almost totally prostrated or converted. But the creation of an hypothesis and the publication of a technical arrangement of terms to support it, could not alter the nature of things. Phlogiston continued to associate with sulphur, phosphorus and coal, as it used to do before the nomenclature was fabricated, and the metals, from platina down to chrome, attracted it as strongly as ever. He considers the table of Parisian chemical nomenclature as having been made prematurely, and as now presenting a stumbling-block to science. In their zeal to cry down phlogiston, its authors have done great injury to the cause of truth.

Now Dr. M. says, that the basis of inflammable air, is Phlogiston; the material, as its etymology imports, that burns with flame or blaze. He observes, that this element has many and powerful connections; among which those it forms with sulphur, phosphorus, coal, and the whole class of metallic substances, are some of the most distinguished. Consequently, every one of these natural bodies, instead of being simple or unmixed, is a compound formed of phlogiston, united to a sulphuric, phosphoric, carbonic or metallic base. This proneness of phlogiston, to combine with other natural bodies, renders it wonderfully instrumental in the economy of this world; not only by its presence and agency in the composition of terrestrial beings, but by the functions it performs in the atmosphere. Dr. M. had visited the fountain of inflammable air near Niagara; he had often extricated it from iron and zinc; he had witnessed its burning vapour on the surface of brimstone, coal, and oil; and had satisfied himself, by experiment and observation, that this phlogistic gas was both capable of uniting with sulphuric, phosphoric, and metallic bodies, in their solid forms, and of dissolving them and carrying them aloft in the air in its fluid form. The chief difference in the two cases was, that in the former the metallic and other bodies were relatively heavy, and the phlogiston light; while in the latter, the inflammable air was abundant, and the metal, or other substance small. In the one, the metal, or other matter,



was weighty enough to bind the inflammable principle to solidity, and to earth ; in the other, the inflammable air having broken its chains, ascended in company with a relatively small proportion of metallic or other matter into the upper regions of the atmosphere. And for the performance of this service, Prof. M. thinks it singularly adapted, since the body possessing the smallest specific gravity, is, by virtue of its strong attractive power, enabled to raise to remarkable heights, particles of those bodies which possess the greatest.

He thus considers this offspring of phlogiston, inflammable air, as elevating to different altitudes in the atmosphere, sulphurous and metallic particles ; which are precipitated per se, or formed into new combinations, whenever the inflammable air in which they are dissolved, and by which they are suspended, shall discharge them, or let them go. The phenomena of meteors, and fiery lights in the atmosphere, receive a happy solution from the application of these principles.

But M. does not stop here. He brings into notice the important, though neglected experiments of Margraff, Boyle, and Boerhaave, proving that rain-water always contains a portion of earthy matter in solution. These interesting facts it has been convenient to overlook, because they could not be reconciled to the fashionable hypothesis. The sound interpretation however of those facts, is, that earths are not only soluble in water, but also mount with it as high as it ascends, and are precipitated either with it when it falls, or without it when they enter into other combinations.

On these considerations, he explains the formation of meteoric stones in the atmosphere, without fetching them from the moon. Rejecting that extravagant notion, he derives the materials of the *aërolithes*, partly from the inflammable air, and partly from the watery vapour, which held them in solution. On their precipitation, the particles associate from aggregative and chemical attractions. The materials are all such as this earth affords. There is no new element among them, as might be expected if they came from another planet. It is in their arrangement of combination only that they form a sort of mineral, unlike any hitherto discovered on earth. And this we should, *a priori* expect, from the reflection, that they are formed in a peculiar manner, whereby a mixture *sui generis* would naturally, and indeed necessarily, be produced. And this explana-

tion applies as well to those scorified stones that, as *Bronson and Silliman finely describe*, fell from the atmosphere in Connecticut, during December, 1807, with the marks of recent fire every where visible upon them ; as to those other *æralithes*, mere aqueous aggregates that descended in France, during July, 1808, as Mr. Saint Ursin relates, all incrust-ed with hail.

These views of the atmosphere, with a theory of the winds, and an abundance of other particulars, are summed up under the name of **AEROLOGY**.

6 **MINERALOGY** is the sixth division of the subject, and comprehends the classification and particular description of those substances that were mentioned in a general and comprehensive way, under the head of Geology. On account of the very recent discoveries, which have enriched and ennobled science, Prof. Mitchill has found himself obliged to discard the quadruple arrangement of minerals, by Bergman, into earths, metals, salts, and inflammables. Although this distribution had received the respectable sanction of Cronstedt, Magellan, Kirwan, and the chief of the modern worthies who have cultivated an acquaintance with fossils ; yet its incompatibility with the present state of facts and observation, render it absolutely improper to adhere to it any longer. That fourfold classification was the most scientific and luminous that had been thought of ; and was well worthy of the fond reception it met with. But it is now time to change it for a better ; for one which is framed and erected on the actual relations of minerals, as now understood. The arrangement he proposes is grounded on his own views of this department of knowledge, and on the penetrating discoveries of Prof. Davy. The prominent features of these joint and concurring testimonies are, the relations which mineral, and especially metallic bodies have to **PHLOGISTON**, and to **OXYGEN** : to which may be added their relations to **SULPHUR**, to **EACH OTHER**, and to **ACIDS**.

I. The first class comprehends minerals, as combined with phlogiston, (or hydrogen). Among these are the metals in their *reduced state*, as it is termed ; that is, the one in which they possess splendour, malleability, and ductility : sulphur, in its ordinary condition ; coal, when affording flame as it consumes ; phosphorus, when burning with blaze ;—among the metals, it is proper to observe, that potash, soda, ammoniac, lime, barytes, magnesia, alumine,

and silex, are reckoned as well as the substances heretofore ranked as metals.

II. In the second class are contained minerals, as combined with oxygen. All *metallic oxyds and acids*, are comprehended in this division ; such as those of lead, iron, &c. as commonly received, and likewise, the alkaline salts and earths, argillaceous and siliceous earths, &c. in their states wherein they commonly exist, making the principal and solid materials of the globe. Modern science has demonstrated that these are chiefly metallic oxyds. The oxyds of carbone, come under this head ; including all the modifications of incombustible coal.

III. Minerals united to sulphur, make the third class ; constituting all manner of pyritical combinations ; all sulphures and sulphurets ; and in short every one of the numerous combinations, denominated *Ores*, by intervention of brimstone.

IV. *Amalgams and Alloys* form the fourth class of mineral bodies. They comprehend all the mixtures of metallic substances with each other. Thus glass is an alloy of two metals, potash and flint ; porcelaine and alloy of two metals, clay and flint ; stone-ware an alloy of clay, flint, and iron, under other modifications ; and the like applies to bricks, tiles, and other mixtures, heretofore deemed earths, but now shown to be metals. All the alloys of the metals, as usually understood, such as the mixtures of gold and silver, &c. with copper, mercury, &c. come under this head, of course.

V. Minerals, as related to acids, make a fifth class. Of these, the acetates of lead and copper, forming the *saccharum saturni*, and *verdigris* of the shops, are examples ; as are also the sulphates of iron, zinc, lime, barytes, soda, potash, and in short the intire section of the *salia acido-metallica*.

Such is the classification of minerals, proposed by Prof. M. to accommodate their manifold forms and species to the actual state of our knowledge. He has little doubt that sulphur ought to be considered as a metal :—consequently the 3d class comprehending the ores, will be merged in the 4th including the alloys. So when we shall know more about the constitution of acids, we shall probably, he says, transfer the subjects of the fifth class,—the acido-metallic salts, to the 2d, comprehending the metallic oxyds and acids.



On this view of the matter, there will be but three classes of minerals, 1. their combinations with phlogiston: 2. their combinations with oxygen: and 3. their combinations with each other. And this arrangement will be the more satisfactory, inasmuch as carbone and phosphorus may be soon expected to take their places among the metals. And then, the carburets of iron, such as plumbago and steel; and the phosphates of lime, such as the teeth and bones of animals, will occupy their appropriate places in the system; the former going to the 4th class among the *alloys*, and the latter to the 2d among the *oxyds*.—Of this whole arrangement, the reader will find a striking corroboration from the experiments of that most ingenious and industrious chemist, who improves science with almost unexampled success, in the royal institution of London.

7. BOTANY is the next division of this course. It comprises all the vegetables which overspread the face of the earth, under two great aspects. 1. Their history as individuals of the animated creation, including their origin from seeds and germs, through the whole of their increase to their inflorescence and fructification, and the formation of seeds and germs again. This comprehends their anatomical, physiological, pathological, and economical characters and uses. 2. Their Classification; which being explained according to the Sexual or Linnæan arrangement, is too well understood to be enlarged upon in such a sketch as this.

8. In his ZOOLOGY, Prof. Mitchill follows the plan of Cuvier, as explained and detailed by Dumeril. The distribution of the animal race into the nine classes of Mammalia, birds, reptiles, fishes, molluscas, crustacea, insects, worms, and zoophytes, seemed preferable to any other, because it embraces both their anatomical structure, and their external characters. For by thus seizing all the points of resemblance which the outward form and inward organization afford, animals of similar natures may be grouped together; while by noting all the circumstances of discrimination, that external and internal marks present, the creatures of dissimilar configuration and appearance may be kept asunder. In this copious and fertile field of discussion, the human race is considered. He distributed the single species, man, as descended from the first original pair, into six races: 1. The Caucasian or European.—2. Hyperborean or Laplander.—3. The Mongol or Tartar.—4. The American; that is the South American.—5. The Malay or

Philippine.—and 6. The Ethiopian or Negro. As to the Aborigines of North America, he considers them as composed chiefly of two races : the Hyperborean, No. 2. which came in by the route of Greenland, and the arctic regions from the east : and of the Tartar, No. 3. which entered by the way of Alaska, from the west. And he supposes that the genuine American form and feature, are only to be found in the south.

9. The ninth and last division of this course, is termed URANOLOGY. As in the former sections, terrestrial objects are treated of at great length ; so in this, it is intended to exhibit what is known of the Heavens.—It is comprehended under three heads, to wit: 1. The history of the Copernican system ; comprehending the sun, the planets, satellites, asteroids, and comets : 2. An account of the sidereal system, or of the fixed stars which constitute the celestial firmament, of worlds innumerable, distributed through immeasurable space, according to Herschell's researches : and, 3. The way in which stars were, among the pastoral tribes of Asia, parcelled into constellations ; and particularly how, for the purpose of tracing and describing in a clearer manner the sun's course along the ecliptic, the zodiac was invented. Dr. Mitchill concludes with the history of the twelve signs ; and professes his endeavour to infuse in his discourses as much as he possibly can of the spirit which animates the writings of Ray, Derham, Smellie, Fontenelle, Pluche, and Saint Pierre.

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## R E V I E W.

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**ESSAY on SHEEP**—*their varieties—account of the Merinos of Spain, France, &c.—reflections on the best mode of treating them, and raising a flock in the United States; together with miscellaneous remarks on Sheep and woollen manufactures.* By ROBERT R. LIVINGSTON, LL. D. *President of the Society for the Promotion of Useful Arts, &c. &c.* New-York. T. & J. Swords, 8vo. pp. 186. 1809.

**I**N a cold country, wool is always a subject of importance to the inhabitants. In the eastern and northern states of the American Union it is peculiarly so. For more than six months of the year, it may be considered as forming the chief material of clothing; and during the other six, it enters largely into the covering of man. In such a climate, wool and the garments made from it, will always be in demand.

The quantity of this important article which the wants of the people require, will be constantly increasing. It will be called for as the human race multiplies. Every babe that is brought into the world is a new customer to the woollen-drapery. And the proudest as well as the meanest of mortals, derives the protection of his naked body against the inclement elements, from the sheep.

Heretofore it has been customary for the people of the American States, to import from foreign countries the principal part of the woollen cloth that they consumed. Although the sheep lived and thrived very well among them, they reared the animal rather for food than for raiment. The carcase was more important, in their estimation, than the fleece. The other productions of a plentiful land afforded them the means of paying for these imports, by remittances abroad; and this system of trade and exchange would have continued for a greater length of time, had not a jarring arisen among the nations.

In consequence of commercial misunderstandings between the U. S. and the countries whence it had been customary to derive their woollen manufactures, it has latterly been more difficult to procure them. With the impediments



to free intercourse, there has been an increase of price; and notwithstanding the illicit trade carried on by smugglers, the augmented cost of foreign cloths is a serious consideration to the wearer.

Amidst these restrictions on the intercourse of nations, it has been found expedient to begin a woollen manufacture at home. Our diplomatic connection with Spain and France has been productive of this favourable result. Two gentlemen whom our government had sent to Madrid and Paris, possessed a patriotic enlargement of soul. They looked beyond the etiquette of courts and levees, and made those ceremonies subservient to a further and nobler end. Availing themselves of the favourable opinion they had excited by their manners, their talents, and their dispositions, they obtained leave to send home a selection of sheep from the best flocks in the two kingdoms. To HUMPHREYS and LIVINGSTON, their country is indebted for that breed of sheep, which bears the material for the finest fabricks. The former, by his poetry, had placed himself among the literary worthies of his time, and by this act has rendered himself more worthy of pastoral celebration, than any swain of Arcadia. The latter had by his proficiency in the law shown himself an upright and impartial judge; and by this act has proved how deserving he was of the honour of the wool-sack.

The first animals of this race, were two pair bought in France by Dr. Livingston, and sent to New-York under the care of one of his own servants, where they arrived in the spring of 1802. Afterwards he obtained permission to ship others, chosen from the highest-bred flocks in that kingdom, by permission of the minister of the home-department. All these derived their pedigree from the stock given by the Spanish monarchy to Lewis 16th, in 1786. This royal donation consisted of four hundred rams and ewes assorted from the best collections beyond the Pyrenees, and were conducted to their new residence under the care of Spanish shepherds. Afterwards, by the treaty of Basle, five thousand Spanish sheep were introduced by the government; and out of these national flocks was formed, by cullings and pickings, the famous flock of Rambouillet. Mr. Humphreys obtained his sheep directly from Spain. A numerous flock arrived in good health at New-York—the particulars of which we insert from the report made by Elizur Goodrich, Esq. to the General Assembly of Connecticut, in

October 1808. This gentleman and his colleague of the committee, state—

“ That they have carefully investigated the facts and connected the various subjects referred to them : and take pleasure in observing, that Col. Humphreys, while discharging the high and important duties of his public station, availed himself of the facilities which his character and acquaintance in the capitals of Spain and Portugal afforded, and in the year one thousand eight hundred and two, extracted from Spain a chosen flock of one hundred sheep of the Merino race. The committee thought it to be their duty, firstly, to ascertain whether this breed of sheep is superior, in intrinsic value, to the several species bred among us ; and secondly, whether, if propagated here, they would be likely to retain their original qualities. It is in proof to the committee, that this race of sheep is inferior to none, in the value of the carcase, or in the facility of management. They are healthful, and fatten easily in our climate. The superior excellence of their wool is fully attested by comparison, and an attentive examination of the fabrics, wrought from the fleeces grown in this country. Indeed the well known fact, that the wool of the Merino breed has been for a long time considered by artists and manufacturers throughout Europe, as indispensable to the construction of the finer woollen fabrics, is in itself, in the opinion of the committee, incontestible evidence of its superior fineness. Whether sheep of the Merino race, if propagated here, will be likely to retain their original qualities, has appeared to the committee to be the main question of practical importance. Upon this point the committee are not left to doubt or conjecture. The evidence, that the wool of the imported Merinos has not deteriorated, is conclusive. Gentlemen of the first intelligence and integrity have attentively watched the progressive state of Col. Humphreys' imported flock, and concur in attesting to the facts, that the wool of the original stock retains all its superior value, in quality and quantity ; that the full-blooded progeny, produced in this country, is in no respect inferior to the stock imported from Spain. Were the proof, derived from the observation and experience of respectable citizens, in any degree incomplete, the fact that the Merino race is capable of enduring all the effects of a northern climate, without deterioration, would be apparent from multiplied experiments made in different countries. They have been successfully propagated in Great Britain, France, Hol-

land, Switzerland, Germany, Denmark, and Sweden. In these new and various situations, their fleeces, on the experience of many years, have been found to have been augmented in quantity, and undiminished in fineness.—On this combined view of facts, the committee do not hesitate to express a decided and unanimous opinion, that the climate of this state is not unfavourable to the propagation of this valuable breed of animals. The committee deem it necessary to suggest the importance of meliorating our breed of sheep ; particularly in the article of wool. The opportunities that are now offered, of crossing the blood, and producing a mixed progeny, as also of preserving and extending the full-blooded breed to an unlimited degree, are in the opinion of the committee, advantages of high importance. That the wool of the mixed breed surpasses that of the ordinary sheep of the country, to a surprising degree, in regard to both quantity and quality, is a fact which is fully attested. It is found to be very useful in the hat manufactory, and is eagerly sought for at a price greatly advanced. Its value to the citizens of this state, is very great for the domestic fabric of homespun garments. The committee find, that the peculiar excellence of the breed is confirmed by experience, beyond contradiction. Many of the citizens of this and other states in the Union, are convinced of its intrinsic value ; and the legislature of the state of New-York, desirous of securing the staple of the woollen manufacture, have considered the extensive spread of the Merino sheep, in and over their state, to be of so much importance, as to encourage it by assurances of liberal pecuniary advancement from their public treasury.

“In regard to the other important matter referred to them, the committee find that Col. Humphreys has with great expense, erected buildings, and procured machinery for carrying on several branches of manufacture in the town of Derby, at a place, which, as it has grown up under his care, may with propriety be denominated Humphreysville ; that among these is the fabrication of cotton, yarn and stuffs, broad and narrow cloths, and stockings of various kinds. The committee hold no speculative opinions on the subject of manufactures ; their views are altogether practical. In their opinion the exertions of Col. Humphreys, in the introduction of labour-saving machines, and the selection of women and children as his principal labourers, are presages of his ultimate success. By this combination of means, he overcomes in a



degree, the embarrassments resulting from the dearness of labour; and at the same time, in a mode very honourable to himself, and useful to the state, converts into an active capital, "the exertions of persons, who would otherwise be idle, (and in many instances a burden to the community) either from the bias of temper, habit, infirmity of body, or some other cause indisposing or disqualifying them for severe toils." The committee view with much satisfaction the endeavours of Col. Humphreys to render the services of women and children more useful; and those of the latter more early useful. Nothing is drawn from tillage, and yet the fund of national industry is increased. The fabrics produced from the factory, are in their colour and compactness, and fineness of texture, honourable specimens of ingenuity and art; and evidence the care bestowed in the instruction of the artists. The course pursued, to imbue the minds of youth with useful knowledge, to preserve and correct their morals, and inculcate the principles of religion, is, in the opinion of the committee, judicious—an example highly deserving the imitation of all persons having the charge of extensive manufacturing establishments. Evening schools are kept in the winter season, and the children are all of them required to attend. Thus while relieved from labour, endeavours are made to render them useful citizens. The committee find, that the exertions of Colonel Humphreys for the extension of literary, moral and religious instructions, have not been limited to those who are placed under his immediate care. He has for several months employed a school-master, at his own expense, for the education of poor children, residing in the neighbourhood of his establishment; and has been at a moiety of the charge of supporting a respectable minister of the gospel in that vicinity.

"On the preceding facts and observations, the committee are unanimously of opinion, that the Merino race of sheep is a valuable acquisition to this state, and that Col. Humphreys, for his patriotic exertions in importing them, is entitled to a public testimony of the respect of his native state.

"The committee are also of opinion, that public encouragement is due to the various important manufactures carried on in his establishment."

"[The resolutions acknowledge the patriotic services of Col. Humphreys, and exempt "his superintendants, foremen and apprentices, in these branches of manufacture, from the

poll-tax and assessments, from military duty, and working at highways, and his cotton and woollen establishment from taxes and assessments for the term of ten years.”]

Thus, by the exertions of two individuals, availing themselves of the opportunities which their public situations and their private fortunes allowed, has the Merino breed of sheep been introduced into the United States; and out of that has grown a flourishing manufacture of fine broad-cloths, from the wool.

The subject being thus explained to our readers, we shall treat them with an extract from Dr. L's. work, in which he gives the natural history of this mild and domestic creature, p. 14.

“I have already observed, that an animal which propagates slowly, which has no means of defence, and which invites by its extreme timidity the attack of its enemies, without possessing the agility to avoid them, could never have existed under its present form in a savage state, but must at all times have owed its protection to man. Should any country in which sheep exist be depopulated, the total extinction of the race would follow the depopulation: we must then seek for the original stock, or prototype of sheep, in some quadruped which possesses force, address, or agility enough to enable it to exist without the aid of man. Some have sought this in the goat; but this is evidently a distinct animal, though very nearly related; since the he goat will produce with the ewe a lamb without wool, that will be productive. But the ram will not impregnate a she goat, which marks an obvious distinction in the race, and shows that the sheep is more degenerate than the goat. Besides that, the goat is evidently descended from the Bouquetin, which appears to me to resemble the tame goat so strongly, that I have not been able to remark any difference in their looks, in their habits, or in their musky smell; except that the Bouquetin\* is a larger and stronger animal than any species of domestic goat that I have seen. The horns also form a characteristic difference between the sheep and the goat. Buffon, and all naturalists since him, have supposed the Mouflon Musmon, or what is sometimes called the Argali, and which Linnæus distinguishes by the name of Ammon,† to form the stock from which the different varieties of domestic

\* *Hircus Sylvestris* aut *Ibex*.

† *Ovis Ammon*.

sheep have originated. Indeed, the resemblance of this animal to the sheep is so striking, that the Russians call it by the name of the Wild Ram. But it resembles the sheep as the vigour of manhood resembles the feebleness of infancy, or the decrepitude of age. The one possesses force, strength, activity; it can defend itself against the weaker animals, and elude the pursuit of the strong; while the other can neither fight or fly; but, without other defence than its innocence, would soon be destroyed by that numerous host to which this is the feeblest of arms, if the utility of the race had not constituted man at once its tyrant and protector.

Pliny says that in the island of Corsica there is a species of Musmones, not unlike sheep, whose covering is more like the shag of goats than the wool of sheep; and that the product of this animal with the common sheep was anciently called Umbri. From this circumstance it may be inferred, not only that they were occasionally mixed, but that the mixed race were so common as to merit a distinct name. This animal is not, however, confined to the island of Corsica; it is at this day to be found in all the uncultivated parts of the islands in the Archipelago, in Greece, in Sardinia, and in the north-eastern parts of Europe and Asia, even in Kamschatka and Siberia.\* The following passage, translated from professor Pallas's voyages, will serve as a full description of the animal. After noticing a summons that he had received from his troop of huntsmen who had killed a wild sheep and lamb, he describes the first in the following words: "The wild sheep called Argali by the Monguls, is stronger than a fallow deer, and weighs about 20 poud (or 660 lb). The ram weighs more, because his horns, when full grown, weigh sometimes more than a poud (33 lb); he

\* Pennant seems to think that it is also found in America, and, in proof of it, he says he has received from thence a fine fringe of twisted wool, which had ornamented the dress of an inhabitant of Red Jack, presented by Dr. Pallas, and that he had himself received another from the habit of an American of latitude 50. The first was white, and of unparalleled fineness: the other as fine, but a pale brown. The first he supposed the wool which grows intermixed with hair on the Argali, and the other to have been from the coat of the Musk Bull, which is a native of our country, and covered with extremely fine long hair, and beneath that a coat of very fine wool. The domestication of this animal would merit legislative attention. The Missionaries to California in 1697, describe two distinct animals, with a head like a deer, and the horns of a ram, which they say were furnished with very good wool, and which they called Wild Sheep. These were doubtless the Musmones or Argali.



is higher upon his legs than a tame sheep, and also more massy. I could remark but little difference in the formation of the head. The Argali has small upright ears. The horns of the female are of a middling size, and form crescents; they are also flat, with two blunt angles over the back, but the lower part forms a sharp angle in front. The horns of the male become enormous, and form a spiral on each side of the head, as those of the European ram; the tail is short, and the hoof like that of the common sheep; in winter the hair is long and frizzled, and mixed with much wool; on the contrary, it is short and smooth in summer. The old sheep had already (22d July) lost their winter coat, at least very little of it remained; their colour is an ash grey. This animal keeps upon mountains that are dry, desert, and free from wood, and upon rocks on which he finds acrid and bitter plants. The ewes lamb before the snows are entirely melted. The lambs resemble young roebucks. Their horns appear on their birth; their hair is soft, woolly, frizzled, and of a deep grey. The stag is not so wild as the Argali; it is almost impossible to approach him; when pursued he makes many turns to the right and to the left, and it often happens, when he finds no rocks or eminences to hide in, he turns upon his steps and passes before the face of his pursuers. He is astonishingly light and swift in the course, and can support a long pursuit. But, however wild this sheep may be, in its infancy the lambs are easily tamed, and habituated to drink milk and eat hay. The soldiers employed on the out posts have frequently ascertained this by experiments."

It is observable, that though there are strong marks of difference between the Mouflon and the domestic sheep, yet there are also strong points of resemblance. The first has been diminished by cultivation as inconvenient, while the last has been improved on account of its utility. As this quadruped has been found throughout all the mountainous parts of Europe and Asia, and perhaps even in Africa; as its young are easily tamed, as its milk, its flesh, and its skin are extremely valuable to man in a savage state, it is highly probable that it was among the first quadrupeds that were domesticated; and, from this circumstance, it has perhaps wrought no less change in man, than man has in it. What respect do we not owe it, if, as is highly probable, we are indebted to it for the conversion of man from the wild and wandering savage, to the mild and gentle shepherd! The horse,

the bull, and the camel, were probably conquests subsequently made over the animal creation, because it required more strength and skill to tame and render them useful; but the young Mouflon was soon tamed; the female savage that followed her husband to the chace snatched it from its bleeding dam, pressed it to her bosom, and became its mother; it sported with her children, and taught them to love a race which they had hitherto pursued only to destroy. A slight ray of reason must have shown the savage how much less precarious his subsistence would be, if he could draw it from an animal that fed at the door of his hut, than if he was compelled to seek it in the chace. He would extend his flock; he would cease to trespass upon the hunting grounds of others; but he would appropriate a portion for the support of his flock; he would compound with his tribe; or the whole tribe, going into the same culture, would mark out limits which they would not suffer to be trespassed upon; they would unite for common defence; the rights of property would be known, and a nation be formed where before only wandering hordes had existed. By what simple means does Providence produce the greatest good? That we are not at this moment fierce, savage, and brutal, little superior to the beasts that roam in the wilderness, and only employing that little superiority in their destruction, and in the destruction of each other, is probably owing to the domestication of graminivorous animals, and, first of all, to that of sheep. To them also we are indebted for some of the most pleasing, as well as for the most important and useful arts. The cradle of music and poetry was rocked by the shepherds of Arcadia; while the spindle and the distaff, the wheel and the loom, originated in the domestication of sheep. This little animal then, in losing its own wild nature, has not only converted the savage into the man, but has led him from one state of civilization to another; the fierce hunter it has changed into the mild shepherd, and the untutored shepherd into the more polished manufacturer. The more sedentary men became, the greater were their wants and dependence upon each other; and in those wants and that dependence originated civilization and polished societies."

He then treats of the *Adiman*, or African variety of the sheep; the *hairy-sheep* of Guinea; the *many-horned* breed of Iceland; the *Wallachian* sheep; the *broad-tailed* sheep of

Asia and Africa ; the *otter* sheep with crooked legs, and the *European* races of Merinos, and Choaroes in Spain ; of the breed of the Hebrides of Scotland ; of the short-woolled race of England and Wales ; of the South Down and Leicester varieties in England ; and of the Arlington, Smith's island, and other valuable sorts in the United States ; and lastly, of the Thibet or Cashmere breed in eastern Asia, surpassing for the exquisite delicacy of the wool, the finest fleeces of Spain.

We recommend to our readers the observations which Dr. L. has made on the diseases of sheep, in his appendix, as worthy the perusal of every farmer. Our limits forbid the insertion of this able disquisition.

It would give us pleasure to quote from this interesting work, the directions which Dr. L. has laid down for improving a flock of common sheep, and by degrees converting them all to Merinos. But for this and for a great variety of other particulars, both curious and instructive, we must refer to the performance itself. But before we dismiss it from our consideration, we must observe, that this Essay was first read during the winter 1809, before the society for the promotion of useful arts in Albany. The opinion of its importance was so strong and general, that the Senate and Assembly of New-York, then in session, passed concurrent resolutions for having the memoir printed. One thousand copies were ordered to be distributed through the commonwealth in the same manner that the laws and journals are. And the Society of Useful Arts directed five hundred copies more to be published for their particular use and further disposition. Under these auspices, with the increase of the Merinos, the profit of their wool and the comfort of the excellent cloth manufactured from it, Dr. Livingston may truly feel himself one of his country's best benefactors, and "not envy (p. 7) the glory of the Argonauts, which probably consisted in bringing the fine-woolled Mingrelian sheep into Greece."



THE HISTORY OF SOUTH-CAROLINA, *from its first settlement in 1670, to the year 1808—in two volumes.* By DAVID RAMSAY, M. D. Charleston. Longworth, 8vo. 1809.

TO those who know the difficulty of ascertaining facts, and for recording them faithfully, it will appear that the genuineness of history will in a great measure depend upon cotemporaneous writers. They who were witnesses of events will, probably, be the most competent narrators. They who acted a part in memorable transactions, generally afford good evidence of what was done. And it must be conceded by all, that candid and competent seekers after historical truth, can in no way better employ themselves than by reducing to writing the evolutions of their own times, while these are yet fresh and new. Whether these penmen are stiled journalists, chroniclers or annalists; or whether they register the acts of a man, a sect, a company, or a whole people, they amass the materials of history. They are the bees that gather the honey. Each carries the quantity he has found to his cell. And there it remains pure and unmixed, until by the skill of a master-hand, the further operations shall be performed of separating and combining anew for greater purposes, the treasures of the hive.

The author of the work now before us, is one of our most respectable historians. He appears to possess in an eminent degree the two grand qualifications for that character; a thorough acquaintance with the documents and monuments left by his predecessors, and a talent for observing the occurrences of his own time. The manner in which he has employed these faculties, and the opportunities which nature and fortune have allotted him, will ever make South-Carolina and the nation feel proud of their RAMSAY.

The first volume comprehends the civil and military history of South-Carolina. It is divided into two great sections. One includes the proceedings from the original settlement under Mr. Sayle, near Port-Royal, in 1670, until 1776; with the warfare against the Spaniards, the aborigines and the pirates, and the subsequent settlement of the back country. The second embraces the history of South-Carolina from a British province to an independent commonwealth; and treats of the recourse of the people to

arms, the extinction of the royal authority, the formation of a regular constitution, the commencement of hostilities at Sullivan's Island, the alliance with France, and the series of campaigns until the peace of 1783.

Valuable as this volume is, its fellow is still more so. Instead of concluding his work with a recital of the contention and quarrelling, the wars and battles, and the succession of parties among the settlers and their descendants, Dr. R. pushes his inquiries into other and more interesting matters. These he has arranged into several heads, each containing a digest of all that belongs to that respective department, fairly abstracted from the general mass of historical matter, and methodized by itself. The titles under which he has arranged these valuable materials, are—1. The Ecclesiastical History of South-Carolina—2. The Medical—3. Legal and Constitutional—4. Fiscal—5. Agricultural—6. Commercial—7. Technical—8. Natural—9. Literary—10. Biographical—11. Miscellaneous—and 12. The Civil History from the termination of the Revolutionary War to 1808. Under these several heads, this methodizing historiographer has arranged much valuable matter. It is conveniently disposed for the reader. Instead of wearying and perplexing him with examining from year to year, from chapter to chapter, and from volume to volume, to become acquainted with either of these great subjects, the author has spared his reader all this trouble, by the perspicuous epitome he has made of each. It is a delightful employment to read history written in this manner. It is happy for the seekers after knowledge, when men of such segregating and such analyzing minds become historians.

It will not be expected that we should enter into a detailed exposition of the various contents of this important work. Instead of such a critical survey, we shall lay before our readers an extract from the chapter on the Medical history of South-Carolina. Something of this kind, it will be recollected, is contained in our *Hex. I. vol. 4. p. 390*, in our review of this gentleman's Memoir to the Medical Society at Charleston, for 1800.

“ Though ordinary fevers since the improvement of Charleston, have been less frequent and less dangerous, yet for the last 16 years the yellow fever has recurred much oftener than in any preceding period. This has not been satisfactorily accounted for. If we refer it to some new state of the air, we virtually acknowledge our ignorance.—

No visible obvious cause can be designated why it should have recurred almost every year of the last 15, and not once as an epidemic disease for the forty years which immediately preceded the year 1792.

"In the year 1699 or 1700, in addition to the calamities resulting from a desolating fire and a fatal epidemic small-pox, a distemper broke out in Charleston which carried off an incredible number of people; among whom were chief justice Bohun, Samuel Marshal the episcopal clergyman, John Ely the receiver-general, Edward Rawlins the provost marshal, and almost one half of the members of assembly. Never had the colony been visited with such general distress and mortality. Some whole families were carried off, and few escaped a share of the public calamities. Almost all were lamenting the loss either of their habitations by the devouring flames, or of friends and relations by this disease or the small-pox. Anxiety and distress were visible on every countenance. Many of the survivors seriously thought of abandoning a country on which the judgments of heaven seemed to fall so heavy. Dr. Hewatt, from whom the preceding account is taken, designates this malady by the general appellation of "an infectious distemper." It was generally called the plague by the inhabitants. From tradition and other circumstances, particularly the cotemporaneous existence of the yellow fever in Philadelphia, there is reason to believe that this malady was the yellow fever; and if so, was the first appearance of that disorder in Charleston, and took place in the 19th or 20th year after it began to be built.

"The same author states, "that in 1703 an epidemical distemper raged at Charleston, which swept off a vast number of inhabitants: and, as the town was threatened by the French and Spaniards, the governor, who called the inhabitants to its assistance, held his head-quarters about half a mile distant from the town, on account of the contagious distemper which then raged therein; not wishing to expose his men to the dangerous infection, unless from necessity." These circumstances make it probable that this was also the yellow fever. If so, this was its second visit, and only three or four years subsequent to the first.

"The same author states, "that the summer of 1728 was uncommonly hot in Carolina; that in consequence thereof the face of the earth was entirely parched—the pools of standing water dried up—and the beasts of the field redu-



ced to the greatest distress—and that an infectious and pestilential distemper, commonly called the “yellow fever,” broke out in town and swept off multitudes of the inhabitants, both white and black. As the town depended entirely on the country for fresh provisions, the planters would suffer no person to carry supplies to it for fear of catching the infection and bringing it to the country. The physicians knew not how to treat the uncommon disorder, which was suddenly caught and proved quickly fatal. The calamity was so general that few could grant assistance to their distressed neighbours. So many funerals happening every day while so many lay sick, white persons sufficient for burying the dead were scarcely to be found. Though they were often interred on the same day they died, so quick was the putrefaction, so offensive and infectious were the corpses, that even the nearest relations seemed averse from the necessary duty.” This is the first direct mention of the yellow fever in the history of Carolina.

“From the information of Dr. Prioleau, derived from the manuscripts of his accurate and observing grandfather, the venerable Samuel Prioleau, who died in the year 1792, at the age of 74, it appears “that in the year 1732 the yellow fever began to rage in May, and continued till September or October. In the height of the disorder there were from eight to twelve whites buried in a day, besides people of colour. The ringing of the bells was forbidden, and little or no business was done. In the year 1739, the yellow fever raged violently as in the year 1732. It was observed to fall most severely on Europeans. In 1745 and 1748 it returned, but with less violence; however many young people, mostly Europeans, died of it. It appeared again in a few cases in 1753 and 1755, but did not spread. In all these visitations it was generally supposed that the yellow fever was imported, and it was remarked that it never spread in the country, though often carried there by infected persons, who died out of Charlestown, after having caught the disease in it.”

“For forty-four years after 1748, there was no epidemic attack of this disease, though there were occasionally in different summers a few sporadic cases of it. In the year 1792 a new æra of the yellow fever commenced. It raged in Charlestown in that year, and in 1794, 1795, 1796, 1797, 1799, 1800, 1801, 1802, 1804, and

1807. The number of deaths from it in these its worst years were—

DEATHS.

In 1799—239.

1800—184.

1802—96.

1804—148.

1807—162.

It appeared slightly in the years 1803 and 1805. In both years its victims did not exceed 59. In the years 1793—1798 and 1808, the disease is not mentioned at all, and in the year 1806 it is only mentioned as having occurred in a very few cases under particular circumstances. In its visitations it extended from July to November, but was most ripe in August and September. With a very few exceptions, chiefly children, it exclusively fell on strangers. The unseasoned negroes were not exempt from its ravages, but they escaped oftener than other strangers; and when attacked had the disease in a slighter degree, and if properly treated were more generally cured. Persons both black and white arriving from the West India islands enjoy similar exemptions from the yellow fever of Charlestown. In the years 1796 and 1799 it raged with its greatest violence, but has since considerably abated both in frequency and violence. This abatement is partly owing to the diminished number of subjects, for strangers have been cautious of residing in or even visiting Charlestown in the warm months. It is also to be in part ascribed to a more judicious treatment of the disease; for physicians now cure a greater proportion of their patients labouring under it, especially when they apply for relief in its first stage, than some years ago when it was a new disease in the practice of the oldest and most experienced of the faculty.† Nevertheless there is

† The detailed particulars of the yellow fever in Charlestown in the year 1802, may serve as a sample of it in other seasons. The whole number of deaths from that disease in that year was 96. Of these two took place in August, sixty-four in September, and thirty in October. In the whole number there was not a single native of Charlestown, though five of them were born in South, and one in North-Carolina, twenty-one were born in England, twenty in the northern states, nineteen in Ireland, eight in Germany, seven in Scotland, five in France, one in Spain, one in Prussia, and one in Madeira. The birth place of the remaining seven could not be ascertained. There was not a single black and only one mulatto died of this fever in 1802; but they were not equally fortunate in other years. One of the subjects to whom it proved fatal, had resided three years partly in Charlestown and partly on Sullivan's island. One had resided two years, two a year and a half, and eighteen for eleven or twelve months in Charlestown. The residence of the remainder varied from eight months to six days.

reason to believe that a real abatement has taken place. Nor is this uncommon, for diseases, like other natural phenomena come and go. Such has been the history of the yellow fever in Charlestown from its settlement to the present time. Solitary cases originated in the country, but they were few in number and not often repeated.

“The laws of Carolina guard against the yellow fever as an imported contagious disease. The uniform experience of the physicians in Charlestown, since the year 1792, proves that it is neither one nor the other; for in no instance has a physician, nurse, or other attendant on persons labouring under this disease, caught it from them. Several after taking it in Charlestown carried it with them and died in the country, yet it never spread nor was communicated to any one who attended on them. In every such case of mortality the disease and the subject of it expired together. The quarantine laws exist in the statute book and impose useless restrictions on commerce, but the execution of them is so far relaxed as not to be unreasonably inconvenient. The present policy adopted by the city council, founded on the recommendation of the medical society, proceeds on the idea of enforcing cleanliness in the houses, yards, streets, harbour, and shipping, as the best practicable means of guarding against the yellow fever and other diseases incidental to the climate. These are all aggravated by the excess of solar heat. The diminution of that exciting cause of disease would be of great service. From this if it could be effected in conjunction with cleanliness and a high dry surface of the soil, both of which have been already attained in Charlestown to a considerable degree, a melioration of the health of the inhabitants might be confidently expected. Two remedies for diminishing heat have been proposed. Shading the streets by trees, or projections from the dwelling houses, so that a person might pass along without exposure to the direct rays of the sun. No one can walk before the national bank without wishing it was practicable to enjoy a similar refreshing shade in every other part of the city. The second proposed remedy is the plentiful introduction of water so as to give a facility for washing and cooling the streets with an artificial shower whenever wanted. Streets either paved or covered with gravelly materials, which would transmit but not stagnate superincumbent water, and occasionally watered, would probably prevent or at least mitigate diseases, and certainly moderate the distressing heat of summer and refresh the inhabitants.”



To this we add a specimen of Dr. R.'s talent in biographical writing, by copying his account of the industrious and excellent Dr. Garden.

"ALEXANDER GARDEN, M. D. was born in Scotland about the year 1728, and was the son of the Rev. Alexander Garden, of the parish of Birse, in the shire of Aberdeen, a clergyman of high respectability, who, during the rebellion in the years 1745 and 1746, was distinguished by his exertions in favour of the family of Hanover; and still more so by his humane interposition in behalf of the followers of the house of Stuart, after their defeat at Culloden. Dr. Garden received his philosophical and classical education in the university of Aberdeen, at the Mareschal college there. He received his first medical education under the celebrated Dr. John Gregory, and studied also a twelvemonth in Edinburgh. He arrived in South-Carolina about the middle of the 18th century, and commenced the practice of physic in Prince William's parish, in connexion with Dr. Rose. Here he began his botanic studies; but having lost his health, he was obliged to take a voyage to the northward for its recovery. In the year 1754 he went to New-York, where a professorship in the college recently formed in that city was offered to him, but he declined acceptance thereof. On his return he settled in Charlestown, and continued to practice physic there for about thirty years. In this period he amassed a handsome fortune, being deservedly in very high esteem, and extensively employed. He brought with him a hæmoptoic constitution, but the complaint was suspended during his residence in Carolina. He was well acquainted with the Latin and Greek classics—understood the French and Italian languages, and was a considerable proficient in the knowledge of the belles lettres; in mathematics, philosophy, history, and miscellaneous literature; but his attention, when the duties of his profession permitted any relaxation, was chiefly directed to the study of natural history, and particularly to that branch of it which is called botany. A list of his communications on these subjects has been already given in the preceding chapter of medical history. Linnæus, with whom he corresponded in Latin, gave his name, *Gardenia*, to a most beautiful flowering shrub; and often mentioned him with applause. He was also highly esteemed by the literati throughout Europe, with several of whom he corresponded.

About the year 1772 he was elected a fellow of the Royal Society of London. Shortly after his return to Europe in 1783 he was appointed one of its council, and afterwards one of its vice-presidents. To extend his knowledge in natural history, Doctor Garden accompanied James Glen, governor of South-Carolina, in the year 1755, when he penetrated into the Indian country, and formed a treaty with the Cherokees in their own mountains. In this expedition Doctor Garden discovered an earth which upon a fair trial by the manufacturers at Worcester, in Great-Britain, was deemed equal to the finest porcelain that was ever imported from India. Unfortunately no precise knowledge can now be had of the spot where this valuable earth was found. Hitherto no advantage has resulted from the discovery, though no doubt exists of its reality and importance. On Doctor Garden's return to Europe, his consumptive diathesis, which had been long suspended, began to show itself. He endeavoured to parry its attacks by travelling. This answered a valuable purpose, but failed in its primary object. He found that wherever he went, his literary fame had preceded him, and induced many to court his acquaintance. In France he was treated by men of science with the most pointed attention, and hailed as a brother. He met with a similar reception in Switzerland, and was particularly caressed by Lavater the author of an elaborate work on Physiognomy. In the course of his travels he tried the effects of breathing his native air, and of revisiting the haunts of his youth, hoping that the pleasing recollection of juvenile scenes would have a salutary influence in arresting the progress of his disease. He was received as a man who had done honour to his native land, and extended its reputation as the soil of genius. He found that his venerable father, after reaching his 90th year, had lately died. Nought remained but to do honour to his memory. The son drew up a monumental inscription in elegant classical latin, commemorative of the virtues of the father. This is shown to strangers as honourable to both, and is respectfully mentioned in the statistical account of the parish, edited by sir John Sinclair.

“ Dr. Garden was highly pleased with the attentions he every where received in his travels, but all this time his disorder was advancing. Having made every exertion to preserve his life, he finally made up his mind to his situation; resolved to travel no more, and to meet his approaching fate

in the bosom of his family. He accordingly settled at London, and soon after expired in that city in the year 1792. The high reputation for literature which he attained, reflected honour both on his native and adopted country. In the first a good foundation was laid, especially in classical learning—in the latter the superstructure was raised. He came young to Carolina, and was then barely initiated in the favourite studies in which he particularly excelled. He acquired most of his botanical knowledge in the woods of Carolina. He was fond of good company, and particularly of refined female society, and to it he devoted a considerable portion of his time; but enough was reserved for mental improvement. He never complained of the climate as too hot for study. In it, though oppressed with professional business, he redeemed time enough to examine its natural riches and to co-extend its fame with his own."

Before we dismiss this instructive and entertaining work, it is incumbent on us to mention, that in an appendix to the second volume are contained eight statistical accounts of islands, towns and districts, in South-Carolina, and a general view of the upper country. Did our limits permit, we should willingly republish that of Edisto island, by Messrs. M'Leod and Auld, as a fine example of this kind of research. But we recommend it and its kindred productions, by Messrs. Palmer, Smith, Jamieson, Thecut, Finley, Myers, Blythe, James, Furman, Park, and Davis, to the perusal and imitation of our fellow-citizens.



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## MEDICAL AND PHILOSOPHICAL INTELLIGENCE.

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### DOMESTIC.

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*A Case of extensive Laceration and Contusion, accompanied with Fracture, which occurred in the practice of Mr. JOHN BELL, Surgeon in Edinburgh—Communicated to Dr. Miller by Dr. JAMES VOSE, of New-York, now at Edinburgh.*

ON the evening of the 11th of April, 1809, I was sent for in haste by Mr. Bell, to attend him to a short distance from town, where a man had been violently hurt. I accompanied him accordingly to the house of the unfortunate patient, whose situation I will describe as briefly as possible. He was by trade a miller, and being engaged in the business of his mill, accidentally observed that the rope employed for hoisting up sacks of grain, &c. had in part slipped from its pulley, and impeded the men in their work. As he reached to adjust the rope in its sheath, he inadvertently laid his hand upon a windlass in rapid motion, and was instantly entangled in the cords attached to the machinery, by which he was thrown upon some of the larger wheels, and dashed against the ceiling with great violence: in this dreadful situation he was fixed by the arm, the mill stopping in its course. Released by his comrades, he was conveyed into the house with scarce a sign of life; but upon Mr. Bell's arrival had revived a little: his extremities were however still cold, his brow bedewed with a cold sweat, his face death-like, his pulse scarcely perceptible, and his respiration deep and long. He had vomited several times, and begged we would let him die without disturbance. His left arm being examined, was found lacerated and mangled in a shocking manner; the head of the shoulder-bone had burst from its socket; the muscles were torn from their insertions; his side was almost completely laid bare; the axillary artery and vein were torn entirely across, and the great nerves lay like broken cords in the axilla. The arm-bone

was shattered in two places, the clavicle rent from its attachment to the acromion scapulæ, and the arm and scapula only connected with the body by a portion of the serratus ant. major. As soon as the patient had sufficiently recovered, Mr. Bell cut the remaining portion of muscle, and removed the limb. *There were only about 20 oz. of blood lost from the accident and operation, and this entirely from small vessels, not a drop of blood escaping from the axillary artery and other large arteries about the joints and scapula.* The lacerated parts were brought together as well as they would admit, but the axillary artery was not tied, as it had retreated within its sheath, and was surrounded with a coagulum which forbade any apprehensions of its giving out blood. Two of Mr. Bell's pupils were left with the patient. On visiting him next day, his symptoms appeared much more favourable; his mind was tranquil, and his pulse not much accelerated; his respiration was however laborious, and attended with a troublesome cough. Upon uncovering the injured side, a large circumscribed emphysematous tumour was found, of the size of a child's head: the air had not however spread to the face, neck, or other parts of the body. The patient was bled, his bowels opened, and he took a little panada. On the third day, the difficulty of breathing had increased, and was attended with expectoration of frothy sputum; the patient complained much of sharp pain in his side; the emphysema had rather diminished, still not diffused; the cough was very troublesome; patient bled largely, &c. &c. On the 15th of April, the fourth day from the accident, the laborious breathing had increased to an alarming degree; the patient's pulse was slow and full; his face turgid with blood, and of a dark purple colour; his wounds notwithstanding began to suppurate kindly. On raising him up in bed to remove the moistened dressing, he expired, having retained his senses to the moment of his death. The dissection was next day performed by Mr. Bell, in the presence of Dr. Monro, sen'r. and several of his friends. The thorax being first opened, five ribs of the left side were found fractured, and the lung wounded, collapsed and covered with a thin layer of coagulable lymph;\* about two pounds of serous fluid were effused into the left cavity of the chest. The lacerated arteries and veins were

\* Dr. Jones has stated in his very valuable book on Hæmorrhage, &c. &c. that the clot never adheres to the artery, and never entirely plugs up its mouth.

examined on the spot. In the axillary artery, (or perhaps more correctly the subclavian, as the divided extremity was within a few inches of the arch of the aorta) a real clot was found of considerable firmness, having a conical form, with its apex extending to some distance within the artery, and its base closely plugging up the orifice and adhering tenaciously to the inner coat of the vessel. An effusion of coagulable lymph had taken place within the cellular coat of the artery, and red blood within the sheath and cellular membrane surrounding it and the vein; this pressed equally on both, and was no doubt, combined with the others, an important agent in preventing hemorrhage. The coats of the artery were thickened, and the internal one slightly inflamed; the extremity of the artery was considerably contracted. The condition of the axillary vein resembled that of the artery, except that its clot was not so firm, nor its extremity so much contracted; its internal coat also was a little more inflamed. The cellular and dura matral tunics of the axillary nerves were slightly inflamed, and the size of their extremities perceptibly increased. The relatives would not allow the head or abdomen to be opened, though there was a small wound on the former. They were indeed impatient during the dissection performed.

The coincidence is curious between the above case and that of the miller mentioned by the celebrated Cheselden,

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*The doctrine of Phlogiston reviving.*

THE Science of chemistry is not yet established upon stationary or immutable principles. In the progress of experiment, new methods of analysis are discovered, and deeper researches are made into the composition of matter.

Of the great theories, the *phlogistic*, or the GERMAN doctrine, and the *oxygenous* or the FRENCH, have been the most distinguished.

Beccher and Stahl were the authors of the former. They supposed that during the burning of bodies something volatile escaped and flew away. From the observations they made on bodies undergoing decomposition by fire, they justly concluded that these contained an inflammable principle. To this they gave the correct and appropriate name of phlogiston. But as sulphur, coal, phosphorus, iron, zinc,



and several other bodies were inflammable substances, those chemists were puzzled to tell what their phlogiston was. For want of such a definition they bewildered themselves and their followers.

The obscurity which thus overspread the science of chemistry prepared the way for a revolution in its doctrines. Lavoisier and Berthollet were induced, by observing the phenomena wrought by oxygen in calcination and combustion, to reject the theory of the German philosophers altogether. They established the antiphlogistic hypothesis; and in reforming the language of chemistry they expunged the name of phlogiston from its nomenclature.

The experiments made in confirmation of the French doctrines were so specious, and the reasoning on them so imposing, that they rapidly won the assent of the chemical world. Kirwan suffered himself to be dazzled by their glare, and to profess a conviction of their truth. Black yielded a too easy assent, and subscribed in his latter days a recantation of the opinions he had publicly taught for many years. And Priestley, whose perspicacity enabled him to discern the inconclusiveness of the alleged facts, and the looseness of the arguments deduced from them, was considered by his old friends as obstinately adhering to antiquated and exploded opinions. This able experimenter persisted to the end of his life in the belief that the Frenchmen were incorrect in their exhibition of facts, and he denied the fairness of the conclusions they deduced from their premises. [See *Med. Repos. Hex. I. vol. 1 and 2*, for the series of the objections he made.] But this great man waged an unequal contest, because he did not define specifically what his phlogiston was.

In 1798, America offered to mediate between the philosophical belligerents; but Priestley was proud of contending alone against the whole host of anti-phlogistians, and the anti-phlogistians were confident of numbers, and sure of victory over the insignificant opposition that remained. It was proposed to them to consider the hydrogen of the neologists as phlogiston, and to make the language conform by obliterating the former of these words, and substituting the latter in its place. But neither party would agree to this fair and equitable proposal. The war continued until it seemed in great measure to have ceased by the removal of the chief of the phlogistians from the field.

It was nevertheless affirmed in America, that the hypo-

thesis on which the nomenclature of 1797 had been formed, was untrue. The metals, sulphur, phosphorus and coal were affirmed to consist respectively of a base and phlogiston. To this phlogiston was ascribed the blaze or flame they exhibited as they burned. To the loss of this, as well as to the absorption of oxygen, was the production of oxyds, acids and water, during that process, attributed. In short, by clothing phlogiston with the character and qualities of hydrogen, the principal difficulties vanished, and the dispute seemed to be capable of being entirely reconciled. [See the plan in Med. Repos. Hex. I. vol. 1. p. 514, and in Nicholson's Journal.] Subsequent discoveries have proved that the table of chemical nomenclature was framed too soon, and that the earths and alkalies are no more entitled to be ranked among the simple substances, than the inflammables and the metals. They are all compounds.

Thus the controversy rested until a series of experiments and doctrines arose in England, which threaten another revolution in chemistry. Towards the close of October 1809, the professor of that science in the new institution at London had persuaded the Scavans, that of the palpable substances there were but two in nature in an elementary state, viz. oxygen and metal. The earths and the three alkalies had all been demonstrated to be metallic oxyds, either by exhibiting them alone, or in alloys with mercury or other metals. The inflammable bodies, sulphur, charcoal, phosphorus and the basis of boracic acid, had been all decomposed, and yielded metal. Strange notions had been started concerning hydrogen. According to the progress at that time made, hydrogen was conjectured to contain a metallic basis, susceptible of eight degrees of oxygenation. 1. The first degree of oxygenation, or protoxyd of this supposed metal, is *common hydrogen*; 2. the deutoxyd is *ammoniac, or volatile alkali*; 3. the tritoxyd is *septon, or azote*; 4. the tetroxyd is *water*; 5. the pentoxyd is *oxydule of azote*; 6. the hexoxyd is *oxyd of azote, or exhilarating gas*; 7. the heptoxyd is *nitrous acid*; and 8. the octoxyd is *nitric acid*. Thus oxygen and the same metal, according to the state and degree of oxygenation, constitute inflammable matter, alkali, azote, water, oxyds and even acids.

Amidst these turnings and over-turnings, it may be plainly seen by an impartial by-stander, that many of the modern experiments and fashionable doctrines erected upon them, are wholly superseded. The facts more lately developed,

warrant the conclusion that the earths and alkalies are composed of oxygen and metal ; and on separating this oxygen from its base, and adding phlogiston thereto in its place, the oxyd is converted to metal proper. While, on exposing those metals to oxygen, the former is detached, the latter absorbed, and the metal re-converted to an oxyd.

And what is true of these new metals, is true, by analogy, of all the other metals. Indeed, *jam redit et virgo, redeunt saturnia regna*—by the addition of phlogiston (hydrogen) to metals and inflammables, do the former acquire their shining and malleable qualities, and the latter the power of flaming or blazing ; and by the departure of this, and the combination with oxygen, do they turn to oxyds and acids.

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*Description of Elgin Garden, the property of DAVID  
HOSACK, M. D.*

(See plate in the beginning of this Number.)

In the year 1801, Dr. Hosack, being the professor of Botany and Materia Medica in Columbia College, purchased twenty acres of land, near New-York, for the establishment of a Botanic Garden. Its situation is on the middle road, between the Bloomingdale and Kingsbridge roads. Its distance from the City-Hall is about three miles and an half. Its inclination is toward the east and south ; so that the plants have the advantage of the rising and mid-day sun. The view from the most elevated part of Elgin-ground, is variegated and extensive. The East and North Rivers, with their vast amount of navigation, are plain in sight. Beyond these great thoroughfares of business, the fruitful fields of Long-Island, and the picturesque shores of New-Jersey, give beauty and interest to the prospect. The tract contains within itself a remarkable difference of soils, from the rocky up-land, to the hilly slope, and the moist and watery bottom. There is consequently that union of situation and convenience, which is adapted to the cultivation of the great variety of vegetable species.

The conservatory and hot-houses present a front of one hundred and eighty feet. They are not only constructed with great architectural taste and elegance, but experience has also shown, they are well calculated for the preservation of the most tender exotics that require protection from the se-



verity of our climate. The grounds are also arranged and planted agreeably to the most approved stile of ornamental gardening. The whole is surrounded by a belt of forest trees and shrubs judiciously chequered and mingled ; and enclosed by a well constructed stone-wall.

The interior is divided into various compartments, not only calculated for the instruction of the student in Botany, but subservient to agriculture, the arts, and to manufactures. A nursery is also begun, for the purpose of introducing into this country the choicest fruits of the table. Nor is the kitchen garden neglected in this establishment. An apartment is also devoted to experiments in the culture of those plants which may be advantageously introduced and naturalized to our soil and climate, that are at present annually imported from abroad. But this institution merits a more minute detail of its various uses. It is therefore requested that the reader will accompany the visitor in a walk while he surveys the different objects which attract his notice in this inclosure.

The forest trees and shrubs which surround the establishment, first claim his attention. Here are beautifully distributed and combined the oak, the plane, the elm, the sugar maple, the locust, the horse chesnut, the mountain ash, the basket willow, and various species of poplar. In front of these, a similarly varied collection of shrubs, natives and foreign, compose an amphitheatre, which, winding with the walks, presents at every step something new and engaging. On the other side the eye reposes on the green lawn which is occasionally intercepted with groups of trees and shrubs happily adapted to its varied surface.

In extending his walks to the garden, on each side, he is equally gratified and instructed by the numerous plants which are here associated in scientific order, for the information of the student in Botany or Medicine. Here the Turkey rhubarb, Carolina pink-root, the poppy and the fox-glove, with many other plants of the *Materia Medica*, are seen in cultivation. The agriculturist also here observes the plants most useful for the food of man, cattle or kine, as well as those which are destructive by their poisonous properties. The artist and manufacturer may also here receive a lesson of instruction.

As he proceeds he arrives at a nursery of the finest fruits, which the proprietor has been enabled to procure from various parts of the world, and from which the establishment

will hereafter derive one of the principal means of its support.

The visitor next comes in view of a pond of water devoted to the varieties of nymphæa, pontederia and other aquatics which adorn its surface, while the adjacent grounds which are moist afford the proper and natural soil for a great variety of our most valuable native plants. The rhododendrons, magnolias, the kalmias, the willows, the stuartia; the candleberry myrtle; the cupressus disticha, and the sweet-smelling clethra alnifolia, here grow in rich luxuriance, and compose a beautiful picture in whatever direction they fall under his eye.

As he leaves this groupe, and passes to the higher situations of this delightfully varied surface, he finds a corresponding distribution of the numerous plants which compose this collection.

Here a rocky and elevated spot attracts his attention, by the varied species of pine, juniper, yew, and hemlock, with which it is covered. There a solitary oak breaks the surface of the lawn; here a group of poplars; there the more splendid foliage of the different species of magnolia, intermixed with the fringe tree, the thorny aralia, and the snow drop halesia, call his willing notice.

Entering the green-house, his eye is saluted with a rich and varied collection: the silver protea, the lemon, the orange, the oleander, the citron, the shaddock, the myrtle, the jasmine and the numerous and infinitely varied family of geranium, press upon his view, while the perfumes emitted from the fragrant daphne, heliotropium, and the coronilla no less attract his notice than do the splendid petals of the camellia japonica, the amaryllis, the cistus, erica and purple magnolia.

In the hot-house he finds himself translated to the heat of the tropics. Here he observes the golden pine, the sugar cane, the cinnamon, the ginger, the splendid strelitzia, and ixora coccinea intermixed with the bread fruit, the coffee tree, the plantain, the arrow root, the sago, the avigato pear, the mimosa yielding the gum arabic, and the fragrant farnesiana.

Here are also to be seen the succulent tribes of aloe, sedum, mesembryanthemum, the night-blowing cereus, and the cactus which feeds the cochineal, covered with its insects.

In front of the buildings are several beautiful clumps

composed of the more delicate and valuable shrubs intermingled with a great variety of roses, kalmias and azaleas. Their borders are also successively enamelled with the crocus, the snow drop, the asphodel, the hyacinth, and the more splendid species of the iris.

Here also is *viola tricolor*,

—————“ A little western flower  
Before milk white : now purple, with loves wounds,”

saluting the senses with its beautiful assemblage of colours but yielding in fragrance to its rival *viola odorata* which

—————“ Sweeter than the lids of Juno’s eyes,  
Or Cythereas breath,”—————

also adds zest to this delicious banquet.

Every tree, shrub, and herbaceous plant is labelled and designated by its botanic name for the instruction of the student.

Dr. Hosack has also connected with this establishment, an extensive *Herbarium* which contains not only a great variety of plants collected by himself in Great Britain, and in this country, but is also enriched by many valuable specimens furnished by the late celebrated Danish professor Vahl ; by Curtis, and Dickson, and by duplicates from the Hortus Siccus of Linnæus, presented by Dr. Smith, the learned president of the Linnæan Society, and the present possessor of the rich collections of the celebrated Swede.

To this establishment Dr. H. has also added a well chosen *Botanical Library*, consisting of the most celebrated works, both ancient and modern, which are necessary to illustrate that science, as well as its application to medicine, to agriculture and the arts to which it is subservient.

Such is an imperfect sketch of the beauties and riches of this ornament of our state and country.

JH



*American edition of Sydenham's Works and Cleghorn's  
Minorca.*

AGREEABLY to the notice inserted at page 90 of this volume, Professor RUSH has published his edition of the works of Sydenham, and of Cleghorn on the diseases of Minorca, enriched by a large number of interesting notes and observations, by which all the practical instruction amassed in those volumes, is modified and adapted to the use of American physicians. A more particular account of these publications will be given in our next number.

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*FOREIGN.*

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*YELLOW FEVER among the British troops at Walcheren,  
in Zealand.*

*Extract of a letter from Flushing, Aug. 26, 1809.*

"THE diseases peculiar to this climate, are already making their appearance among our troops; several intermittent cases have been reported to the physicians within the last eight days, and I am sorry to understand that a considerable extension of such complaints is apprehended. The sufferings of our troops during the siege, particularly from the rain and inundations, must predispose their constitutions to the endemic diseases of Zealand.

*August 27.*

"The report of the endemic complaints multiplies every hour. The two physicians at Middleburgh, Doctors Faulkner and Knight, have had nearly 120 private soldiers and 20 officers consigned to their care within the last three days, the whole afflicted with intermittent, remittent and low nervous fevers.—The remittent fevers peculiar to this climate have the same symptoms and appearance as those which belong to the yellow fever in the West-Indies, although not quite so dangerous.

“The operation of the diseases which I have mentioned is so baneful, particularly to strangers, that no less than 1500 French were buried in this island within the last year, the garrison here being rather numerous, until the necessity for dispatching reinforcements to Bonaparte in Austria, had drained the whole of the Dutch territories.

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PROGRESS IN AMERICAN BOTANY.

By a Letter from C. RAFINESQUE SCHMALTZ, Esq. of Palermo, in Sicily, to DR. MITCHILL, dated May 30, 1809, the following Botanical information is received.

HAVING made an investigation of the genuine Hypopithis, which differs from the genus *Monotropa*, in having a double calyx, most of the flowers 8androus, and the stems multiflorous, I have been enabled to discover and ascertain 5 American species belonging to the same—all different from the European ones, called by Linnæus *Monotropa hypopithis*, viz.—

1. *H. Stricta*—Stems pubescent, angulous, striated leaves, and bractæas obtuse, externally pubescent, spike erect, flowers scattered. (In Maryland.)

2. *H. Lanuginosa*—(*Monotropa lanuginosa* Mich. flora.) Leaves and bractæas acute; these and the flowers woolly externally, spike cernuous, flowers scattered. (In Carolina.)

3. *H. Secunda*—(*Mon. lanug. var. mx.*) Leaves and bractæas acute; these and the flowers woolly externally, spike erect, flowers one sided and cernuous. (Carolina.)

4. *H. Dentata*—Leaves and bractæas ovate, acute, dentated, spike erect, flowers one sided, hairy externally. (In Virginia and Maryland.)

5. *H. Racemosa*—Stems hairy, angulated leaves, and bractæas hairy entire, racemes erect, flowers pedunculated erect. (In Maryland and Pennsylvania.)

It is probable I shall send to England for publication, my manuscript of *Nova genera et species plantarum Boreali-Americanarum*, while I shall publish here two other works—an *Index Panphyton Siculum*, and *Essays on Natural History*: this last will contain several tracts on American natural history, a fasciculus of plants, another of birds, &c.

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## APPENDIX.

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*A Letter from JOHN R. B. RODGERS, M. D. Health-Officer of the port of New-York, to the Board of Health in that city—wherein the malignant sickness which prevailed in the village of Brooklyn during the summer and autumn of 1809, is proved to have arisen locally there, and the ships in which it was alledged that the distemper was imported, are cleared from all suspicion of having been concerned in its introduction. Dated New-York, Nov. 24, 1809.*

ON the occurrence of Malignant Fever at Brooklyn this summer, the question of its origin was agitated, and with it some illiberal reflections thrown on the management of the Health Department.

I then did myself the honour of saying to you, that, at the proper time, I should state such facts as might give light to the former, and should completely refute the latter. I now with much pleasure perform my promise, and I trust that I shall show that all the requisitions of the law have been strictly complied with, and all our duties faithfully fulfilled.

Before I go farther, it may be proper to notice an unfair and disingenuous insinuation against me, that my private theoretical opinions would certainly prevent me from doing my public duty. To every man who is under the high obligations of honour, and more especially the still more solemn obligations of his oath, such a sentiment is vile and detestable.

You know, gentlemen, that the law gives me but little discretionary power; that this discretion is only in the detail of business; that in every material point, it is precise, distinct and peremptory; and whatever it enjoins, I must perform. This, I *know*, has been done; and, with the pride of conscious integrity, I can challenge the contrary to be proved.

I have even done more than I otherwise should, because I knew that it was thought by some, that I did not believe in all the speculative doctrines which the law acknow-



ledges. I had, therefore, prejudice and misrepresentation to avoid, by a steadier and more attentive course, and had to atone for a supposed medical sin, by a work of supererogation.

Although I differ from some on the origin of Malignant Fever in our country, yet I agree with all in the propriety of cleansing foul vessels, of changing bad air, of preventing impure materials of any kind, or sick persons from going into a city, and of affording a comfortable asylum to sick and unfortunate seamen.

The first section of the law passed in 1804, is what is mostly depended on "to provide against infectious and pestilential diseases;" and to show that this has been properly attended to, I declare, that from the first of June to the first of October, no vessel has gone up to New-York, on board of which has been any Malignant Fever, or person who had had it during the voyage, or which had come from any place where such fever prevailed at the time of her departure; nor has any vessel gone up that had had that disease during such voyage; no foul materials of any kind, or dirty clothes, have gone up to the city; nor has any person gone up contrary to the strict letter and spirit of the law passed in 1806, directing the performance of four days of quarantine of observation. Passengers have occasionally given bonds to spend these days at other places than at the quarantine ground; and these obligations have never, that I know of, been violated. No person has deserted from any vessel on board of which has been Malignant Fever. The intercourse with the quarantine ground has been as strict as the nature of the place and the institution could admit, nor has any evil arisen from any improper intercourse.

On this ground, then, I might rest a secure defence. I however go farther, and shall consider the cases of several vessels which have been particularly inculpated, because thereby it is wished to criminate the Health Officer.—The first is the *Concordia*. This ship arrived at the quarantine ground on the 17th of June, nineteen days from the Havanna, navigated by *twelve* men, with *fifteen* passengers. The Havanna was healthy at the time of her sailing. She brought no disease; the same crew had made the voyage in perfect health, except one who had slight indisposition for a few days, when he recovered; no one had had Malignant Fever on board; no impure materials were or had been on

board; the cargo was molasses and sugar; she staid her four days of observation, and all being well, the ship being ventilated, their clothes being washed, and the bilge-water clean, she was permitted to pass to New-York, with the usual directions to unload and lay in the stream according to law. From this we see that the Health Officer could do no otherwise than permit this vessel to go up; nor had he the right to direct her to any other position than what the law prescribed, nor the power to prevent her from going to Brooklyn, or Jersey, or any other place, other than that portion of New-York island interdicted by law. In doing then as he did, he fulfilled the requisitions of the law, and if he had not so done, he would have violated his duty, have incurred deserved censure, and probably exposed himself to prosecution.

I now give you a statement of facts relative to the Concordia, after she left the quarantine ground. It is in part taken from the affidavit of the mate of this ship: "That the ship Concordia, after having discharged her cargo in the stream at New-York, hauled over to Brooklyn on the 29th of June last. The next day a seaman of the name of Nathaniel Mullen, was taken sick; he had been ashore at New-York, and the day before hauling over to Brooklyn, was excessively drunk the whole of that day, and the following night, while drunk, slept the whole of the night on deck, exposed to the dew and air. On the 30th of June he was sent ashore, and went to the house of Mrs. Smith, in Brooklyn, where he died the 3d of July. Mullen had not been at Brooklyn before the ship hauled over, nor had any of the hands been on Long-Island before the 29th of June, nor had any one from Brooklyn any intercourse with the ship before that time. The people of the vessel visited and attended on Mullen during the whole of his illness. None of them, however, nor any other person who has had any connection with him or the house, either as lodgers or visitors, have had any complaint of a febrile nature. There were at the time of Mullen's death, several lodgers in the house, and it has continued to be a lodging-house ever since, and no one has been indisposed that has been there. Mullen had been well during the whole of the voyage to the Havanna and home again, and had never been sick since being connected with the ship, till his drunken frolic and sleeping afterwards on deck. Two men were hired at Brooklyn to clean out the limbers of the ship, and they

have been free from any complaint to this time. The limbers could not be said to be dirty; for although the ship had stone for ballast, on which some molasses had drained, yet there were not more than two buckets full taken from her, and that was chiefly sand, and not at all of a bad smell. The ship is 255 tons—No person has ever been on board the ship at Brooklyn, to enquire into any circumstance of her case, nor has any question ever been asked on board of her, respecting her health or that of her crew, but by the Health Officer, at the quarantine ground. The person giving this information has been on board almost constantly; he and three seamen have lived constantly on board, slept and eat there; and none have been in the slightest degree indisposed. Mr. Sands, at Brooklyn, and his wharfinger were frequently alongside, the latter often on board, and neither have been affected at the time of giving this information.

Masters and mates of vessels, perhaps one dozen in number, have *very often* been on board, and staid frequently till late at night, so as to make long visits; none of these have ever been in the smallest degree indisposed with fever or any other sickness that the informer knows. The intercourse with the ship was free and unrestrained. A block-maker, with three of his people, constantly, and sometimes four assistants, worked for many days on the wharf at which the ship lay, and close to her, and were, during that time, *over* and *on* the ballast thrown out of the ship, and none of them have been to this day indisposed. Mullen boarded at Mrs. Smith's, one wharf below where the shipping get water, and below any house where there has been any sickness. Mullen had no clothes washed at Brooklyn, (except by Mrs. Smith). They were all taken by the person who signs and swears to this, put into a chest by him, and those which were clean sent to his friends."

By this it appears, that neither Mullen nor any of the people of the Concordia had ever been at Brooklyn before his sickness, nor had any of the people of Brooklyn any communication with the ship before the 30th of June.

We see also sufficient cause for the production of disease in Mullen; and when we consider it in connection with other cases of fever occurring this season, without any intercourse whatever with shipping, and precisely and exactly similar in their exciting cause, we cannot for a moment doubt respecting his.



By the testimony of Mrs. Smith and others at Brooklyn, we know that Mullen was brought to her house in a boat, and therefore had no communication with any persons belonging to Brooklyn, in passing from the ship to her house, which is at the lowermost part of the town. There were at the time of Mullen's death four lodgers in her house. These men worked at Messrs. Hicks and Jackson's yard, to the westward of Mrs. Smith's, and still farther removed from the infected part of Brooklyn, neither of these, nor any person whatever with whom they have been or lived, have had any sickness.

Mrs. Smith's family and her lodgers had no intercourse whatever with the upper part of the village, nor did any one from that quarter come to her house during the season of sickness, or after Mullen's death. The distance between Mrs. Smith's house and the infected part of Brooklyn, is more than a quarter of a mile. The person of Mullen then appears to be completely free from any blame, whatever, in producing disease, nor does any one in Brooklyn venture to say that it could possibly be communicated through him. There is now no other possible way for the disease to be produced, on the principles of importation, but by the cargo of the ship or foul air in her. The cargo was, as you have seen, not of materials fitted to convey contagion or produce foul air; it was sugar and molasses; and even if it had been of other materials and ever so foul, they were all discharged at New York and sent into the city, except a few boxes of sugar, which were retained on board at the moment of hauling over to Brooklyn, because the ship needed them with the ballast to keep her on her legs. These, however, were discharged immediately on coming to the wharf at Brooklyn, and taken in a lighter directly to New-York; and none of the persons taking this cargo on shore, carting it to the different owners, or any other person concerned with it, has ever been sick. How can we now imagine that this cargo could possibly produce evil, even if all the town of Brooklyn had handled it?

From the declarations of those who have survived their illness, and from what the unfortunate victims to the disease, who were asked on that point during their illness said, it does not appear that a single one of them ever had been on board the *Concordia*, or had any connection with any of her people. I have seen a list of fifteen among the

first cases which occurred at Brooklyn, and it appears that not one had been on board this ship, though some of them had been on board of other vessels. I have also the testimony of several of the most respectable citizens of Brooklyn, in which they all agree in never having heard any one say, or having heard it said, that any one supposed he derived his sickness from the Concordia. But there would be internal evidence to this effect, for the ship was extremely light and appeared so to any eye, and therefore no one would ask to unload a ship which was evidently unloaded; nor were there any bales or other goods on the wharf where she lay, as an incitement to the inquisitive labourer, and she lay below and detached from other vessels which had cotton and other goods on board, and which were unloaded by labourers. She was so light and high out of the water, that for the greater part of the tide, going on board was very inconvenient and troublesome, no one therefore but a person having absolute business would go on board. It appears, in favour of the ship, that the first cases of fever were among those who by their occupations had no connection with shipping. But the entire freedom from disease of all those who we know had communication with the Concordia, is evidence in her favour, and against her introducing sickness at Brooklyn. There were *eleven* of the crew, exclusive of Mullen and *fifteen* passengers; these, added to the *pilot* and his *two* men, who took him on board, the *Custom-House Officer and his boatmen*, with the *Health Officer and his boatmen*, at the quarantine ground, the *Boarding Officer and his men*, the *Inspector of customs and lighterers* at New-York, the *one dozen* masters and mates, frequent visitors to the ship, the *labourers* to discharge the cargo, the *limber-cleaners*, the *block-maker and his assistants*, the *wharfinger and his son* at Brooklyn, will give you an aggregate of between *seventy and eighty* persons, whom we know and who might be named, who have had free and unrestrained communication with the ship before she was remanded to the quarantine ground. If to these you add the clerks or agents for those who had cargo on board, and who probably did go on board before hauling over to Brooklyn; the outward crew who came on board at the quarantine; the lighters employed to bring ballast from New-York; the pilot and his men to take her out, and others who had business on board, you will have a number far exceeding *one hundred persons*, who were on

board the ship, *not an individual of whom has been in the least affected thereby, but continue, as far as we know, in perfect health to this day.* If the persons connected with her had been *first* affected, or if *any* of the persons *most* connected with her had *at all* been affected, then there might be some suspicion, and even then it would not amount to any thing like positive proof; but in the present case there is no ground for even suspicion itself to rest on, and all the proof is in favour of the ship. We have seen that there were no materials to produce foul air from; and even if there had been foul air in her, it would only have affected those who went below the lower deck; for the air in the hold of a large ship is generally cooler than the external atmosphere in July, and would therefore seek the keelstone, and in the hold of a double decked deep ship, would be at perfect rest, and therefore could not infect any one walking over the deck, unless there were a quantity of putrefying materials on board constantly generating and throwing off this foul air. But all these supposed circumstances, in all their parts and connections, were absolutely and entirely wanting.

An exception has been taken and urged against the *Concordia*, because the mate had said that he had poured vinegar into the hold upon the ballast, and had washed the fore-castle with vinegar directly after the death of Mullen. It is perfectly natural to suppose that the mate was alarmed when he found Mullen had died of a disease pronounced Malignant Fever; and, supposing that Mullen had caught it somewhere, he might fear that he had or would communicate it to the ship: with this apprehension he used vinegar, believing it might destroy all contagion.—Now his doing this *then* and not before, and telling of it, is a proof that he had no idea of any danger or evil being in the ship, except as resulting from Mullen alone, and instead of being an argument against the ship, is in her favour, and shews that he supposed Mullen had imported evil from the place he had come from to the ship, and that place was New-York. We know that sailors always wash out the fore-castle or steerage of a ship whenever any one dies from her, and when the vessel is hove out, they go through a process of cleaning the ship. This is done as well from the fear of contagion, as because the neglect of it might operate against the vessel at lazarettoes or quarantine establishments. The process gone through, of itself chan-



ged the state of the air, and thereby would render intercourse with her more secure.

It surely will not be said that the ballast gave any disease. This was clean stone ballast, on which some drainings of the molasses had come; it was thrown out at Brooklyn; it was by no means offensive, nor could it be so from the circumstances in which the ship was, and the washings just now related. It was so far from being disagreeable or inconvenient to be on, that it appears five people who were constantly working on the wharf where it lay, were frequently *over*, and often working directly on it. It deserves to be remarked, that the buildings and lots which were nearest the Concordia, and which form the north western face to the wharf where she lay, are Mr. Sands' store, the end of Mr. Nichols' bakery, the block-maker's shop, and the end of Mr. Nichols' office. Now, *all* the persons, and the *only* persons, to the amount of *nineteen*, who worked nearest and were on this spot, have continued well. This most certainly does not look as if there was foul air or disease in the ship or ballast. Thus, while we are looking for accusations against this vessel, we find that the nearer we approach her the more health we see, and the farther we recede from her, the more disease we meet. The perfect impunity then, with which all the persons that we know of had connection with this ship, the entire safety with which they dwelt in her, and their continued freedom from all disease, put the question of the air of the Concordia and the whole matter completely at rest.

We now come to the *Brutus*. This ship was also implicated, though I cannot see for what reason, unless it was to throw a little more blame on the Health Officer, in having permitted a vessel to pass to the city supposed to be sickly; and if there had happened to be any Malignant Fever in the neighbourhood of where she lay, it would no doubt have been attributed to her. She would then be charged with importing it from Brooklyn, where she had been three days, and thus, with additional blame, some public resentment might be turned against the Health Officer. These, by the favour of heaven, have happily not occurred. The *Brutus* plainly came from a wrong port, and arrived too late to contribute any thing to the mischief at Brooklyn, and the neighbourhood of the Old-slip has continued remarkably healthy. This ship arrived

on the 12th of July from Savannah ; she was healthy and had been so the whole voyage ; Savannah was healthy and has continued so to this time ; her cargo was rice and cotton ; she went up immediately and hauled into Brooklyn that evening or the next morning ; she discharged her cargo on the 13th, 14th and 15th, and on the 16th hauled over to New-York. She had no connection with any vessel at Brooklyn then, or any time since, nor the ship any connection with any vessel from the West-Indies then or since. From the 16th of July till the 26th of that month, when she was ordered to the quarantine ground, she lay between the Old-slip and the Coffee-House-slip. On the 20th of July, John Pitman, a seaman, was taken sick with fever ; he was but slightly affected, and was convalescent when the ship came from New-York. On the 21st Henry Jenkins was seized with fever, and came down to the Marine Hospital with the ship ; he died on the 31st of July. Jenkins had the same fever which has affected so many seamen from Savannah river this season, and which has occurred in vessels from that port every year since I have been at the quarantine ground. It will not, I presume, be said that Robert Eastes, the seaman who fell into the hold of the Brutus, and died in less than forty-eight hours afterwards, had Malignant Fever, and yet even that was asserted by some not knowing all the circumstances of the case. The Brutus had no other febrile sickness or complaint on board, and clearly did no harm. Two of the persons who had fever at Brooklyn, said that they had worked in storing cotton from the ship *Alligator*, and had worked in her hold. This circumstance was only stated by them incidentally, without attributing any particular blame to her. It however is urged by some persons in Brooklyn as a cause of complaint. This ship could not import fever, because she came from a port where there was no sickness, nor had any one been sick on board, nor were there any foul materials to produce disease. We absolve then the *Alligator* from all blame. Two men also are said to have been taken sick after working on board the ship *Joseph and Phebe*, and one of them said that the ballast was foul. This vessel sailed from New-Orleans in May, and arrived at quarantine on the 20th of June last, with a cargo of cotton and tobacco. New-Orleans was healthy at her departure, and she brought a bill of health. Her crew consisted of sixteen, with eight passengers, all in

health ; these have all continued well ; this vessel went up on the 24th of June. I am not prepared to say what was the state of her ballast at the time the abovementioned men worked on board, because this ship has since gone to Europe, and I know not where to obtain further information respecting her. I have not, however, heard of any one suspecting harm of her, except the man first alluded to. I do not believe the ballast was foul, or it would have indicated itself by the state of the bilge water, or some smell in the fore-castle and steerage ; neither was the case. But allowing that the ballast was foul, and allowing that there had been a sufficient quantity of putrid materials on board to have produced sickness, yet this would not add an atom of weight to the argument of importation in her case ; it would only go to prove that local evil in a ship would produce disease just as in a house. The very principles of importation release this vessel from blame, and the entire freedom from disease of every person connected with her, (except the man from the poisoned air of Brooklyn,) goes to show that no evil resulted from her ballast. The bare circumstance of an individual being sick after having been in a particular spot, is no conclusive argument against *that* particular spot ; there must be an union of a great many circumstances to establish such a point. If *every one* working there were taken ill, and *they only*, and if *that* spot or place *only* was foul, and all other places clean in which these persons lived or worked, then you might attach suspicion to such spot ; but directly the reverse is the fact in the present instance ; for, added to the testimony in favour of the vessels implicated, you have the most unquestionable proof of the number and magnitude of local nuisances at Brooklyn sufficient to poison the purest atmosphere, and engender the most fatal pestilence, and also, of *the very persons* who had worked on board these vessels living in the filthiest spots, lodging in the most sordid and crowded apartments, and indulging in habits every way fitted to destroy them. You will hardly credit the assertion, yet it is nevertheless true, that in the middle of July last, two of these very men were visited in a small and extremely confined garret, not fourteen feet from the surface of the ground, belonging to a house, the cellar of which had been filled with all imaginable filth for some years past, and was at the time some inches deep with water and mud, emitting a noxious and pestilential air ; that this garret had no



window to it, and had light and air only admitted by a small scuttle, which was shut whenever it rained, and that the person who gave me the information was under the necessity of having a candle to light him through the room at noon day. In this wretched apartment, rendered deadly by the foul air from the cellar and adjoining yard, were lodged three miserable men, whose own confined breath made pestilence more fatal. I need not say that two of them died, and the third survived by miracle! These men would have had Malignant Fever, if there had not been a ship within a degree of New-York.

The last vessel I shall notice is the ship packet Pizarro. I should not consider the case of this ship, if it had not been said that she was a foul ship when she came up, and thereby some blame thrown on the quarantine examination, and on the master of the vessel. The truth is, that the packet Pizarro was, when she went up to New-York, as clean a ship as any in the harbour, and yet some good and worthy men, having heard a suggestion of danger respecting her, gave information against her as a foul ship and a grain vessel; and although neither of these was the fact, the Board of Health were obliged, to gratify public opinion, to order her to the quarantine ground, where, after discharging her cargo, heaving out her ballast, and cleaning out her limbers, it was fully proved that all the charges were utterly and entirely groundless.

It now appears, from the view which we have taken of this subject, that those persons most connected with shipping, and those living on board of ships, have been entirely free from disease, while those removed from them have been affected. This is utterly inexplicable upon the supposition of importation, connected with the known principle of contagion being more concentrated and more active the nearer we approach the body therewith affected, or the source and centre of action. Upon such supposition the farther from danger the greater would be the dangerous effect.

We have also seen this season, that the disease in question has never been personally communicated, or transmitted beyond or from the individual affected by the poisoned atmosphere; and that, although the intercourse between Brooklyn and New-York was open and unrestrained for more than a month after the disease appeared in the former place, no importation took place to the latter, and

even when the communication was interdicted by ordinance, we know that the law was openly evaded, and the intercourse constantly kept up, yet no evil has happened. It surpasses then, all human conception, to suppose that a vessel, in the circumstances of the Concordia, or others just named, could possibly produce disease, and yet the very subjects of the disease itself not be able, in a single instance, to affect others; or, that this disease should come, in the persons of healthy men, in a healthy ship, in pure and clean materials, more than a thousand miles, and yet not be able to pass over as many yards, in the bodies and clothes of hundreds of people of all descriptions, pure and impure, sick and well, passing and repassing constantly every hour in the day, for more than a month, to and from the very centre of contagion—such a supposition would involve the gross absurdity of the infinitely lesser cause producing the infinitely greater effect, or the infinitely greater cause producing no effect at all. Having now by a strong chain of circumstantial evidence, proved that the disease was *not* imported, and there being a total want of any in the affirmative, we are compelled of necessity to allow it to be of domestic origin. It is indeed now admitted on all hands, that Malignant Fever may, and often does arise from local and domestic causes; this is allowed by the Board of Health of Philadelphia this summer, in the case of two men sickening from the influence of damaged fish, and we suppose it to be of domestic origin in the case of the man arriving from Philadelphia, and who died on Governor's Island in August last; we know also that two men with Malignant Fever, were sent last summer from New-York to the Marine Hospital, neither of whom had any connection with shipping or seamen; one of them was seized on the 5th of July, after being excessively drunk and exposed one whole night to the open air, *precisely and exactly similar to the case of Nathaniel Mullen, of the Concordia*. After the summer and autumn of 1805, from the utter inability of proving the importation of fever *then*, and the abundant number of facts going to establish the opposite truth, no one doubted the disease to be of domestic origin *that* year; and so strong was this belief, that an attempt was seriously made to reconcile the two doctrines, by admitting of domestic origin *occasionally*; all this being admitted, and it being also allowed by the Board of Health of Charleston (S. C.) that Malignant Fever this summer in that city was not imported, but *endemic*, we may surely

suppose it *might* be produced in Brooklyn this season too: this supposition is however strengthened into firm belief, when we consider the report of the Brooklyn Committee, and the several relations which you have had of the nature and extent of the nuisances of the infected part of that village. We know, in confirmation of this opinion, that in no instance has this disease ever appeared as epidemic in any of our cities or towns, without the presence of open evident local nuisances. In addition to what has been said, I beg leave to refer you to the enclosed letter of Dr. Smith on that subject.

I have now, gentlemen, effected my purpose, and have not stated all the facts which would still more confirm it. The limits of this letter forbid my going into the contested doctrine of Fever and its production. You will see this subject well discussed elsewhere; and if I were to point to a production where it is treated in a manner the most closely condensed, yet most luminously clear, it would be to the letter of the Resident Physician, addressed to Governor Lewis, in January, 1807. This is among the documents of the Health Office. It only remains that, with you, I offer up the humble tribute of gratitude and praise to the Father of all mercies, for the uncommon health of our city during the last season, and for that unvaried freedom from pestilence with which we have been blessed for four successive years.

With much respect, I have the

honour to be, your obedient servant,

JOHN R. B. RODGERS, Health-Officer.

*The Hon. Dewitt Clinton, Esq. President, and }  
the members of the Board of Health. }*

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*Letter from Dr. E. F. R. Smith, to Dr. Rodgers, relative to Brooklyn, dated November, 1809.*

DEAR SIR,

ACCORDING to promise, I now furnish you with the few facts relative to the source of the late Malignant Fever at Brooklyn, that have come under my view.

You will recollect that the month of June, with the exception of some days in the latter part of it, was uncommonly cool. A good deal of rain fell early in the month, which on the 9th and 12th was very heavy.—About the 19th it began to grow warm, and from this time till the 29th the Mercury stood higher than it has since done



through the whole summer. About this time the fever broke out, certainly under circumstances very favourable to domestic origin. For although from the situation of Brooklyn, and from the size of the place, we should not expect to meet with many sources of miasmata, yet the fact was, that nuisances of every description abounded, and at a time too very favourable to noxious exhalations. I shall not rest satisfied with mere general assertions of the filthiness of the streets, though these were very dirty, but shall proceed to point out the particulars which came under my inspection.

About midway between the old and new ferries, there is a small street or lane, which comes down the hill obliquely, running about N. W. and S. E. This lane is very crooked, and in some parts comparatively low, so that there are many obstructions to the draining off of water, although on the side of a hill. It is occupied chiefly by small houses and stables, and not being a public place, there was no destruction nor removal of perishable substances, however great the quantity.—Accordingly, at different distances up this lane, there were small heaps of animal and vegetable matter thrown from the adjoining houses, and many of them in a state of putrefaction. The stables were very dirty and very offensive to the smell, so that in walking up this street, the senses were continually annoyed. But however abundant filth might be here, it was comparatively very little to what might be found lower down. At the foot of the lane is a wharf (I believe Sands' wharf, next below his house) on which are situated a number of small houses, and among the rest, four of wood, particularly deserving of notice. Here was to be found the great source of disease: for being situated on a flat at the bottom of a hill, all those substances which escaped from above, were washed down, and here accumulated in a stagnant heap. Not only the wharf and street were very dirty, but the cellars of these houses were receptacles of filth subsiding from above. One of them I inspected narrowly, and such a mass of putrid matter as was collected in the cellar, I never before saw. It had long been unoccupied, and from its low situation it was constantly filled with water. Here were to be found animal and vegetable substances of every description collected in a great mass, and constantly covered with water. The fermentative process was so percep-

tible to the eye, that the surface was covered with bubbles, continually bursting and emitting a gas intolerable to the smell. The slops of the house were thrown into the cellar, and every other nuisance of a sailors' boarding house was here deposited. You can readily conceive that thousands of poisonous vapours might exhale from this cellar, and that not only a small village but a large city might be infected by such a cause. But this was not the only source of exhalation. The cellars of the adjoining houses I was informed were nearly as bad as this; and from their external appearance I could readily believe it. For they were on the same level, and the houses above occupied by the same class of people. But moreover, in the rear of these houses, at the distance of a few yards is a distillery. This distillery is in a very low situation, and so conscious was the proprietor of the filthiness of his place, that upon asking some questions relative to his recovery (for he had the fever), and what he supposed to be the cause of it, he directly assured us there was no dirt about the distillery, and that we need not seek for any other cause than importation. But upon inspection we found that he kept a number of swine, which were fed from the gleanings of his still-house, and that an immense mass of filth lay directly below their pen. This was very offensive and annoyed the whole neighbourhood.

Thus then if we combine these various sources of miasmata, and consider that they were all found nearly in the same place—and if to these we add the filth taken from an adjoining dock and deposited upon the wharf nearly about the same time; and further, if we advert to the fact that the disease originated in and was almost entirely confined to this neighbourhood, I think we need not seek further for the cause, but may rest satisfied that in this instance at least our own country is to blame for the production of this pestilential fever. I have purposely avoided saying any thing relative to the suspected vessels, because the facts already in your possession are more minute as well as more conclusive, than any that I could furnish you with. If these will be of any service to you, you are at liberty to use them as you please.

I am sir, yours, &c.

EPHM. FITZ R. SMITH.

DR. RODGERS.